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VOL. 13 No. 11

March 15, 1963

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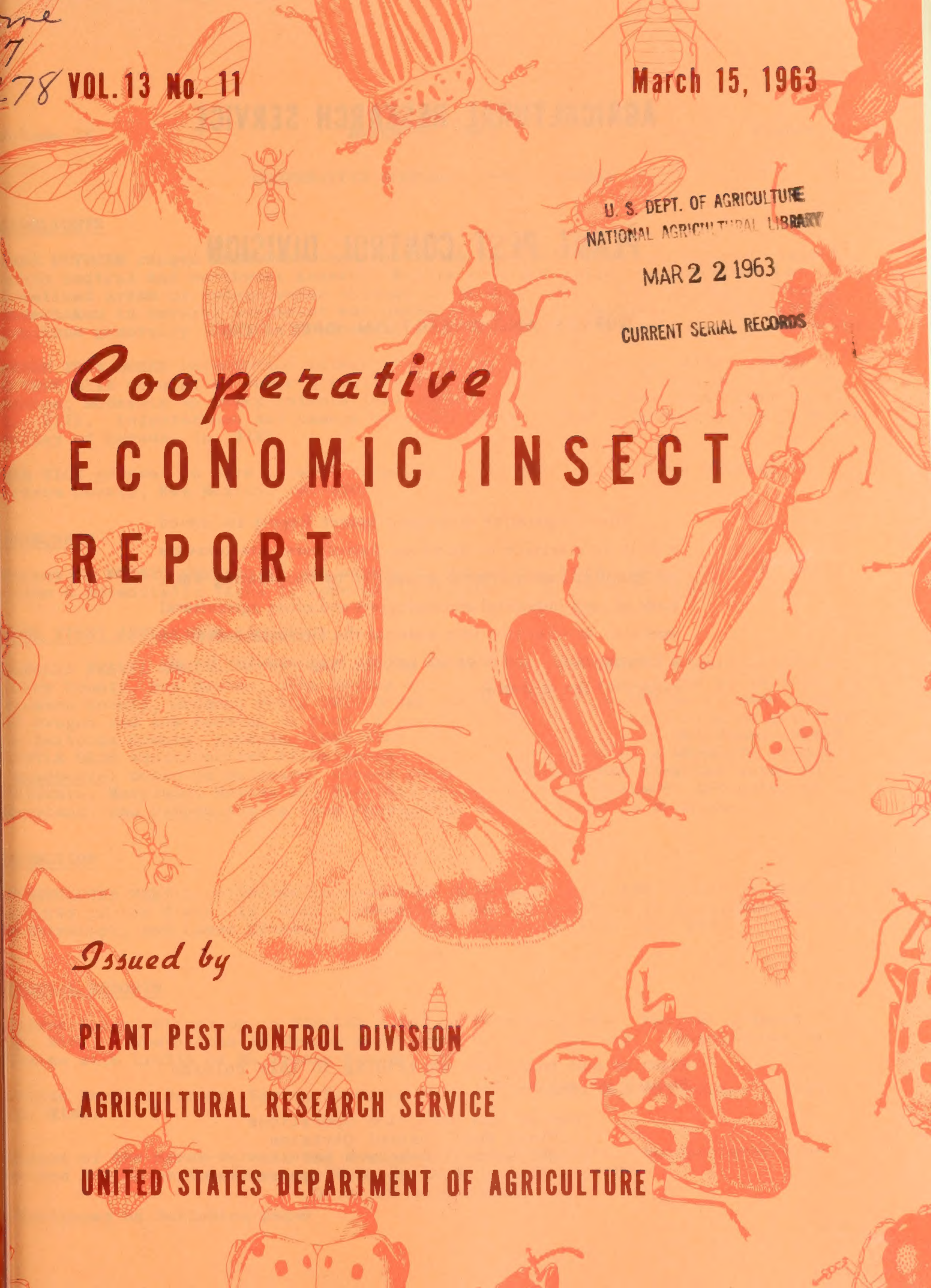
Cooperative ECONOMIC INSECT REPORT



Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 13 March 15, 1963 Number 11

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

ARMY CUTWORM ranged from less than one to 18 per foot of row in wheat in central, south central and southwest Kansas. Entire area not uniformly infested, but localized areas of damage occur throughout general area. Army cutworm controls undertaken in several northwest and panhandle areas of Oklahoma. GRAIN APHIDS continue generally light in Southwest; some PEA APHID activity noted. (pp. 215-216).

PEACH TREE BORER infestation rather high in North Carolina. (p. 216). TEXAS CITRUS MITE population above normal on Florida citrus with little or no freeze damage; moderate to heavy infestations expected to be more prevalent than usual. (p. 217). Infestations and damage by ONION THRIPS heavy on green onions in Moapa Valley of Nevada. (p. 218).

EAR TICK present in ears of most animvals in several cattle herds checked in Sierra County, New Mexico. (p. 220).

FORECASTS

Survey of POTATO PSYLLID in overwintering areas of Arizona and California indicates a potentially light to moderate infestation in 1963. (p. 218).

SOME FIRST APPEARANCE RECORDS

ALFALFA WEEVIL adults active and mating in Nevada; GRASSHOPPER nymphs noted in Curry County, New Mexico; PEAR PSYLLA active and laying eggs since March 1 in Jackson County, Oregon; PEACH TWIG BORER emerged from hibernation in same area of Oregon and now feeding in buds of peach; POTATO PSYLLID appearing on potatoes in Maricopa County, Arizona; LONE STAR TICK becoming active in Oklahoma; COMMON CATTLE GRUB adults active in Oklahoma; first-stage larvae of a MOSQUITO (*Aedes canadensis*) noted in Delaware; winged forms of SUBTERRANEAN TERMITES noted in Delaware, Maryland, Nevada and Florida; winged forms of PAVEMENT ANT noted in Maryland; and *Camponotus* sp. and *Formica* sp. adults found in Michigan.

DETECTION

SWEETCLOVER WEEVIL collected in southwest Oklahoma; first ARS record of this species in the State. (p. 216). IMPORTED FIRE ANT recorded in Issaquena County, Mississippi, and Lamar County, Georgia, for the first time. (p. 223).

SPECIAL REPORTS

Citrus Insect Situation in Florida - End of February 1963. Special Comment. (p. 216). Populations in Freeze-defoliated Groves. (p. 216). Populations in Groves with Little or No Freeze Damage. (p. 217).

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1963. (p. 218).

Status of the Screw-worm in the Southwest. (pp. 220-221). No specimens submitted during period February 24 to March 2.

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Summary of Insect Conditions in the United States - 1962

Truck Crop Insects
Eggplant, Pepper, Potato and Tomato Insects - (p. 224).
Bean, Pea and Other Legume Insects - (p. 229).
Beet, Sugar Beet and Spinach Insects - (p. 233).
Crucifer Insects - (p. 235).
Cucurbit Insects - (p. 238).
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Artichoke and Lettuce Insects - (p. 241).
Carrot Insects - (p. 242).
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Miscellaneous Truck Crop Insects - (p. 245).
Tobacco Insects - (p. 246).

Reports in this issue are for week ending March 8, unless otherwise indicated.

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WEATHER OF THE WEEK ENDING MARCH 11

Few, if any hydrometeors of interest were reported from the Far West during the past week. However, as if to balance the scales, heavy to excessive rains fell over a large area from the central Great Plains eastward, extending over much of the Northeast. Amounts exceeding 4 inches fell locally in Arkansas, Georgia, South Carolina, North Carolina, Tennessee, Kentucky, West Virginia and Ohio, as the storm passed from the Midwest on the 4th over New England on the 6th. Rain falling on snow and ice covered and frozen ground was subject to immediate run-off, causing severe localized flooding over most of the Ohio River Basin. Three lives were reported lost as a result of the stormy weather in Indiana. Flood stages were reached or exceeded on all streams and rivers in Ohio, setting some new record high marks. Ice jamming caused local flooding from Iowa to Pennsylvania when streams were swollen from rain and snowmelt.

The storm, which also gave heavy snows to New Mexico and Colorado during the previous week, left heavy amounts across northwest Kansas, much of Nebraska, Iowa, southern Wisconsin, Lower Michigan, Pennsylvania, New York and New England. Typical amounts ranged to 8 inches in Kansas, over 12 inches in Wisconsin and near Lake Ontario in New York, and to 10 inches in northern New England. Little snow cover was left at the close, except in the Northeast, where there is still 4 to 5 feet in northern areas of New Hampshire and Maine. Average temperatures over much of the Nation departed very little from normal. Only in Maine, eastern Upper Michigan and much of Colorado and southeastern Wyoming were departures deficient more than 6°. The largest departures were at Denver, Colorado, and Cheyenne, Wyoming, where average temperatures were 12° below normal. Significant, but not excessively above-normal temperatures were recorded in a small area from eastern Kentucky and West Virginia to the coast, and in most of Montana. Havre, Montana, had a weekly average of 12° above normal.

Heralding the start of damaging spring storms were the severe thunderstorms in the Gulf States. On the 5th, an afternoon tornado at Bessemer, Alabama, inflicted some damage and injuries. Large hail fell near Dallas, Texas, on the 10th. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Survey conducted in central, south central and southwest areas to check problem created by this species on wheat. Counts ranged from less than one to 18 per foot of row; damage variable over area. Entire area not uniformly infested, but localized areas of damage occur throughout general area. Early planted fields appear much more heavily infested than late planted fields. Early planted wheat made good growth during fall of 1962, but leaves have been winterkilled; as a consequence, little new growth is evident. In heavily infested areas, larvae keep new growth eaten off as it appears. Area with heavier damage also lacking in soil moisture, which is preventing wheat from making good growth. In areas of low moisture, larval counts as low as 2-3 per foot appear to be economic. Weather has hindered insecticide applications. Controls that have been applied have produced variable results. Problem area lies in band between Reno and Finney Counties, extending from southern part of State to as far north as Russell County and possibly farther. Time and weather conditions did not permit surveying farther north. (Somsen, Peters). OKLAHOMA - Controls undertaken in several areas of northwest and panhandle regions. Counts up to 12-14 per linear foot of row noted in Grant County; average 6-8 per linear foot. Damage observed in Texas County, panhandle area, with counts up to 12 per linear foot. Light counts of 0-1 per linear foot observed in southwest counties; similar counts noted in Noble-Pawnee County area. (Okla. Coop. Sur.). NEVADA - Half-grown larvae averaged 1 per crown or 2-3 per square foot in alfalfa in Lovelock, Pershing County. (Arnett, Lauderdale).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Of 25 stalks inspected, 24 showed damage. Only one of 14 larvae recovered was alive. Counts in same field in fall of 1962 showed a high percentage of live larvae. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum*) - OKLAHOMA - Populations continue noneconomic throughout State with counts averaging less than 5 per linear foot in fields checked in southwest. Only occasional winged forms observed. (Okla. Coop. Sur.).

GRAIN APHIDS - ARKANSAS - Activity remains low. Surveys in northwest area negative for GREENBUG (Schizaphis graminum*) and ENGLISH GRAIN APHID (Macrosiphum avenae*). (Ark. Ins. Sur.). OKLAHOMA - Populations of ENGLISH GRAIN APHID (M. avenae*) and APPLE GRAIN APHID (Rhopalosiphum fitchii) continue very light in all fields checked in southwest. (Okla. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Light populations found in wheat in Beckham, Jackson and Tillman Counties, southwest; highest counts of 50-75 per foot of row in Jackson County. These occurrences found in areas which did not receive rain earlier in period. With continued dry conditions in these areas, populations could build up and surveillance is warranted. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Only very light populations observed in scattered southwestern areas. (Okla. Coop. Sur.).

LEAFHOPPERS - ARIZONA - Injuring some lawns in Salt River Valley. (Ariz. Coop. Sur.). OKLAHOMA - Becoming active in wheat and alfalfa. (Okla. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - NEVADA - Adults active and mating in Churchill, Douglas, Pershing and southern Washoe Counties. (Arnett, Bechtel, Cooney, Lauderdale, Martinelli).

AN EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Reported in many alfalfa fields in all portions of Maricopa County; also appearing in some alfalfa in northwestern edge of Pinal County. (Ariz. Coop. Sur.).

* See CEIR 13(5):84.

SWEETCLOVER WEEVIL (Sitona cylindricollis) - OKLAHOMA - Light larval populations found in alfalfa in Beckham, Jackson and Tillman Counties. (Okla. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum*) - ARIZONA - Reported on alfalfa in Yuma, Maricopa, Pinal and Pima Counties. (Ariz. Coop. Sur.). OKLAHOMA - Very light counts observed in overwintering alfalfa in Beckham, Jackson and Tillman Counties. (Okla. Coop. Sur.). NEW MEXICO - Occasional light infestations found in alfalfa in Artesia area, Eddy County. Populations extremely light in alfalfa checked in Dona Ana County. (N. M. Coop. Rpt.). ARKANSAS - None found in northwest. (Ark. Ins.

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Only occasional specimens found in a field in Frederick area, Tillman County. (Okla. Coop. Sur.).

STEM NEMATODES - ARIZONA - Unspecified species causing considerable damage to alfalfa in Maricopa County. (Ariz. Coop. Sur.).

A DARKLING BEETLE (Blapstinus sp.) - ARIZONA - Injuring safflower in experimental plots in Pima County. (Ariz. Coop. Sur.).

GRASSHOPPERS - NEW MEXICO - Occasional nymphs of unspecified species noted in fields in Curry County. (N. M. Coop. Rpt., Mar. 1).

FRUIT INSECTS

PEACH TREE BORER (Sanninoidea exitiosa) - NORTH CAROLINA - Infested nearly 100 percent of 90 two-year-old budded peach trees recently dug in Wake County. Total of 1,000 trees of this size present in block; those undug appear to be 70 percent or more infested. Some trees dead, many badly injured. Up to 13 larvae recovered from a single tree and 7-8 larvae per tree found in most of 10 trees closely examined. Reported badly infesting 5-acre peach orchard of established trees at Rocky Mount, Edgecombe and Nash Counties; nearly all trees infested. Orchard not treated during summer and fall of 1962. (Mount).

PEACH TWIG BORER (Anarsia lineatella) - OREGON - Has emerged from hibernation in Jackson County peach orchards and now feeding in buds. (Berry). CALIFORNIA - Heavy in peach seedlings in Auburn, Placer County. (Cal. Coop. Rpt.).

AMERICAN PLUM BORER (Euzophera semifuneralis) - CALIFORNIA - Damaging peach trees in Loomis, Placer County. Damage in bark around bud union. (Cal. Coop. Rpt.).

PEAR PSYLLA (Psylla pyricola) - OREGON - Has been active and laying eggs since March 1 in Jackson County. Small numbers of eggs observed at Hood River, March 4. (Ellertson, Berry).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - OREGON - Ranged 20-30 per unopened bud cluster in Jackson County pear orchards. Populations concentrated in tops of trees and on sheltered tree trunk areas. (Berry).

PEAR RUST MITE (Epitrimerus pyri) - OREGON - Active in Jackson County fruit orchards. Populations observed in quantity under bud scales. (Berry).

Citrus Insect Situation in Florida - End of February 1963

Special Comment - The Florida citrus industry was very fortunate in that no prolonged period of subfreezing weather occurred over wide areas of the citrus belt after severe freeze of December 12-14, 1962. Extent of cold damage became readily apparent the latter part of February. In severely damaged groves, new growth was absent or confined to central limbs. Groves with lesser damage had developed new leaves over part or all of canopy. Where new leaves were still undersized by mid-February, many such leaves began to wither or fall, indicating further dieback of weak canopy wood. Some additional withering and dieback is to be expected during March in most December-defoliated groves. Melanose infection is common and expected to be heavier than usual on both leaves and fruit. Insects and mites are still scarce on new flush.

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* See CEIR 13(5):84

Populations in Freeze-defoliated Groves (Canopy entirely 1963 leaves) - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 16 percent of groves; 8 percent economic. TEXAS CITRUS MITE (Eutetranychus banksi) infested <1 percent of groves. CITRUS RED MITE (Panonychus citri) infested 5 percent of groves; less than 2 percent economic. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested less than 1 percent of groves. APHIDS infested 20 percent of groves; less than 1 percent economic. WHITEFLIES infested 4 percent of groves; none economic. Populations of SCALE INSECTS are low. Scale insects are not present on new flush.

Populations in Groves with Little or No Freeze Damage (Canopy mostly 1962 leaves) - CITRUS RUST MITE infested 54 percent of groves; 40 percent economic. Populations near normal but increasing. Highest districts are Bartow and Indian River. TEXAS CITRUS MITE infested 44 percent of groves; 24 percent economic. Population is above normal; moderate to heavy infestations expected to be more prevalent than usual. Highest districts are ridge and Indian River. CITRUS RED MITE infested 33 percent of groves; 15 percent economic. Although population will continue to be much below normal, a few heavy infestations will occur. SIX-SPOTTED MITE infested 2 percent of groves; none economic. APHIDS infested 11 percent of groves; none economic. Population is near normal low level at present but will increase in March. WHITEFLIES infested 89 percent of groves; 31 percent economic. Population of larval stage on undersurface of old leaves is much greater than normal. PURPLE SCALE (Lepidosaphes beckii) infested 82 percent of groves; 21 percent economic. Infestations are heavier than normal for February but few are a serious threat at this time. Most are still in young stages, not yet susceptible to parasite attack. BLACK SCALE (Saissetia oleae) infested 14 percent of groves; none economic. FLORIDA RED SCALE (Chrysomphalus aonidum) infested 21 percent of groves; 3 percent economic. Population is below average and infestations are very light. GLOVER SCALE (Lepidosaphes gloverii) infested 60 percent of groves; 7 percent economic. CHAFF SCALE (Parlatoria pergandii) infested 51 percent of groves; 5 percent economic. Populations of both species continue to be above normal. Very few infestations are important at this time. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - First find of this species in Yucatan; 36 trees found infested in City of Merida. Infestation considerable distance from principal citrus-producing area in Yucatan. Total of 30,045 citrus trees inspected on 31 properties in Tamaulipas; light infestations found on 1,399 trees on 6 properties. Low temperatures killed many parasites in Tamaulipas. Total of 198,400 parasites received for release in groves in Michoacan, San Louis Potosi, Guerrero and Chiapas. Also, 300,000 specimens of a parasitic eulophid (Prospaltella opulenta) were captured in San Luis Potosi and 3,080 specimens were captured in Puebla and liberated in groves in those locations. Chemical Control Zone - One adult found near fruit packing-shed in Allende, Nuevo Leon. Very light infestations found on 2 other properties; treatments begun immediately. Inspection of 108,603 citrus trees on 2,927 properties in States of Nuevo Leon, Coahuila, Tamaulipas, Sonora and Baja California showed only 9 trees on 3 properties in Allende infested. This was first find of live citrus blackfly since February 1962. In this area, 52,839 trees on 78 properties received first application; this included 37,100 citrus nursery trees and 8,000 secondary host nursery trees. (PPC, Mex. Reg., Jan. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - One male specimen taken in Cameron County and one female in Willacy County; these are first finds of the season. (PPC, South. Reg., Jan. Rpt.). MEXICO - Inspections in Baja California and northern Sonora negative. (PPC, Mex. Reg., Jan. Rpt.).

A PINK CITRUS RUST MITE (Aculus pelekassi) - FLORIDA - Infested Citrus sinensis at Arcadia, De Soto County (Feb. 28). (Fla. Coop. Sur.).

TRUCK CROP INSECTS

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1963

The 1963 potato psyllid (Paratrioza cockerelli) survey was conducted March 7-9 in the overwintering areas of Arizona and California. Weather conditions over much of the area surveyed have apparently been unfavorable for development of wild Lycium, preferred host plant in the breeding area. Lycium plants in the Tucson-Phoenix area were in good condition; however, those in the Blythe-Needles-Barstow area were relatively void of any foliage. The desert area from Needles north was especially dry. Throughout the survey the weather was warm, clear and calm. Psyllids were collected at better than 95 percent of the stops except where there was no foliage on plants. At about 5 percent of the stops, nymphs were numerous and eggs were observed. The survey indicates a potentially light to moderate infestation this season. A comparison of potato psyllid populations found during the spring surveys 1957 through 1963 is shown in the following table. (PPC, West. Reg.).

Potato Psyllid Survey on Overwintering Host
Average No. per 100 Sweeps

State	District	1963	1962	1961	1960	1959	1958	1957
Arizona	Phoenix-Tucson	715	2236	149	665	992	93	95
California	Blythe-Barstow	185	909	41	282	237	96	143

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Appearing on potatoes in Maricopa County, especially where fields adjoin desert area. (Ariz. Coop. Sur.).

CABBAGE APHID (Brevicoryne brassicae) - GEORGIA - Light on cabbage in Thomas and Colquitt Counties. (Johnson, Feb. 27).

A NOCTUID MOTH (Proxenus mindara) - CALIFORNIA - Larvae light on sugar beets in Woodland area, Yolo County. This species becoming more common each year. (Cal. Coop. Rpt.).

A LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae light on sugar beets in Woodland area, Yolo County. (Cal. Coop. Rpt.).

ONION THRIPS (Thrips tabaci) - NEVADA - Infestations and damage heavy on green onions in Moapa Valley, Clark County. (Zoller).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - Infestation in stored sweetpotatoes found in Coffee County, GEORGIA, for first time since 1955. Several new infestations found in Forrest and Lawrence Counties, MISSISSIPPI. Inspection of stored sweetpotatoes in LOUISIANA revealed 14 newly infested properties. (PPC, South. Reg., Jan. Rpt.).

APHIDS - MARYLAND - Eggs of an undetermined species averaged 25 per 10 leaves on strawberries at Salisbury, Wicomico County. (U. Md., Ent. Dept.). ARKANSAS - Undetermined species found occasionally on roots of strawberries inspected in White and Woodruff Counties. (Ark. Ins. Sur.).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - LOUISIANA - Regulatory inspections removed in Bienville, Claiborne, Grant, Lincoln, Rapides, Union and Webster

Parishes. (PPC, South. Reg., Jan. Rpt.). ARIZONA - Lint cleaner inspections negative, except in Graham County where 21 larvae found on 49 inspections. (PPC, West. Reg., Jan. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

WESTERN PINE BEETLE (*Dendroctonus brevicomis*) - CALIFORNIA - This species and *Ips* sp. damaging ponderosa pines in groups and single trees in area of Round Mountain adjacent to Zambini Mill, Shasta County. Some 60 acres of timber being damaged where millowner did not follow up on control work begun 2 years ago. Sanitation salvage has been effective in such instances where it is a continuing practice. (V. Osborn, USFS). *D. brevicomis* severely damaging groups of ponderosa pine trees in 5-acre private stand. Owner will do control work. Sanitation salvage has been recommended to private owners of small plots and program is increasing. (R. Paulus, USFS).

PALES WEEVIL (*Hylobius pales*) - ARKANSAS - This species and *Pissodes* spp. active in southern portion of State. (Ark. Ins. Sur.).

GYPSY MOTH (*Porthetria dispar*) - Temperatures to date not low enough to kill eggs in VERMONT. Many egg clusters parasitized by an encyrtid (*Ooencyrtus kuwanai*) in central and southwestern Vermont and in NEW HAMPSHIRE. Total of 211 egg clusters found at 32 locations in MASSACHUSETTS. Egg clusters also found in CONNECTICUT, NEW YORK, and NEW JERSEY. (PPC, East. Reg., Jan. Rpt.).

A GEOMETRID MOTH (*Hydriomena nubilofasciata*) - CALIFORNIA - Adult populations heavy on live oak trees in Pleasanton, Alameda County. (Cal. Coop. Rpt.).

TENT CATERPILLARS (*Malacosoma* spp.) - ARIZONA - Reported hatching in large numbers in Pima and Gila Counties; probably will appear in Maricopa County, defoliating cottonwood and other shade trees. (Ariz. Coop. Sur.).

A LEAF MINER - NORTH CAROLINA - An undetermined species killed tips of redcedar in Union County; many redcedars in county affected. (Whitfield, Mar. 1).

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) - UTAH - Heavy on many poplars and willows in Vernal, Roosevelt and Duchesne areas of Uinta Basin, northeast. (Knowlton).

A JUNIPER TWIG MOTH (*Periploca nigra*) - CALIFORNIA - Heavy populations occurring in twigs of juniper in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

A PSYCHID MOTH (*Apterona crenulella*) - CALIFORNIA - Populations heavy on coffeeberry plants in Rough and Ready, Nevada County. (Cal. Coop. Rpt.).

WOOLLY APPLE APHID (*Eriosoma lanigerum*) - ARKANSAS - Usual heavy infestations present on trees heeled in last year. (Ark. Ins. Sur.). NORTH CAROLINA - Apparently this species responsible for damage to roots of crab apple in Greensboro, Guilford County; however, no specimens found on roots. (Robertson).

AN ARBORVITAE APHID (*Cinara tujafilina*) - NEW MEXICO - Abundant on arborvitae throughout Dona Ana County; honeydew very noticeable. (N. M. Coop. Rpt.). NEVADA - Light to medium on arborvitae nursery stock recently introduced from out of State. (Bechtel).

APHIDS - NEW MEXICO - Light to moderately heavy infestations of unspecified species reported on chrysanthemums in Las Cruces area, Dona Ana County. (N. M. Coop. Rpt.). ARKANSAS - Probably *Lachnus* sp., active on pussy willow in Jonesboro, Craighead County, northeast. (Ark. Ins. Sur.).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - CALIFORNIA - Populations heavy on camphor-trees in Tulare, Tulare County. (Cal. Coop. Rpt.).

Coccids in Florida - *Fiorinia theae* moderately infested *Camellia japonica* at Dade City, Pasco County (Feb. 27), and *Poncirus trifoliata* at Grapeville, Seminole County (March 4). *Pseudaulacaspis pentagona* severely infested *Ligustrum* sp. at Orange Park, Clay County (Feb. 25), and lightly infested *Diospyros* sp. at Punta Gorda, Charlotte County (Feb. 27). (Fla. Coop. Sur.).

A MEALYBUG (*Trionymus diminutus*) - CALIFORNIA - Eggs, nymphs and adults occurring in medium numbers on leaves of *Phormium* sp. in a nursery in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

DOGWOOD CLUB-GALL MIDGE (*Mycodiplosis alternata*) - NORTH CAROLINA - Infesting dogwood in New Hanover County. Det. by C. F. Smith. (Mount).

CYCLAMEN MITE (*Steneotarsonemus pallidus*) - DELAWARE - Heavy on cyclamen plants at a locality in New Castle County. (Burbutis).

A SPIDER MITE (*Oligonychus platani*) - CALIFORNIA - Heavy on leaves of pyracantha shrubs in Tulare, Tulare County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

EAR TICK (*Otobius megnini*) - NEW MEXICO - Present in ears of most animals in several cattle herds checked in Sierra County. (N. M. Coop. Rpt.).

LONE STAR TICK (*Amblyomma americanum*) - OKLAHOMA - Becoming active in southeast, with 10-15 per head reported on cattle in Pushmataha County. (Okla. Coop. Sur.).

BROWN DOG TICK (*Rhipicephalus sanguineus*) - DELAWARE - Heavy infestations in homes reported on numerous occasions throughout the winter months in New Castle and Kent Counties. (Burbutis). WISCONSIN - Several specimens collected in Milwaukee, Milwaukee County; one specimen engorged. (Wis. Ins. Sur.).

TICKS - ARIZONA - Unspecified species reported troublesome in Maricopa and Gila Counties; most reports concern appearance of ticks inside homes. (Ariz. Coop. Sur).

CATTLE BITING LOUSE (*Bovicola bovis*) - NEVADA - Unusually heavy on several beef calves in Yerington, Lyon County. (Lundholm).

CATTLE LICE - OKLAHOMA - Several species remain active around State. (Okla. Coop. Sur.). NEW MEXICO - Have become a minor problem on range cattle in Sierra County. (N. M. Coop. Rpt.).

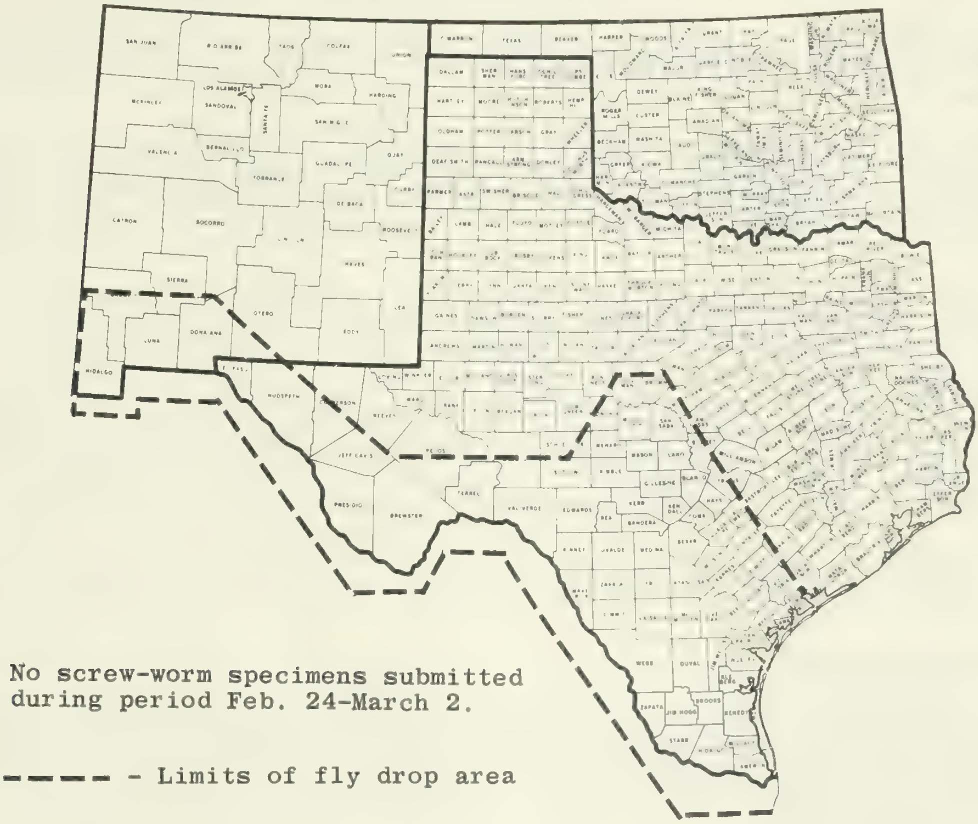
CATTLE GRUBS (*Hypoderma* spp.) - MICHIGAN - Larvae, up to half grown, present in backs of Holstein heifers shipped in from out of State. (Dowdy). NEVADA - Mostly out of backs of cattle in west central counties. Average 5 per head in one untreated herd in Lovelock, Pershing County. (Arnett, Lauderdale). OKLAHOMA - *H. lineatum* activity declining. Counts per animal ranged 0-3 on mature cows and 0-6 on steers in Stillwater area, Payne County; ranged 0-1 per head on yearling calves checked at Ponca City, Kay County. Some adult activity noted in Noble, Payne and Creek Counties. (Okla. Coop. Sur.).

MOSQUITOES - DELAWARE - First-stage larvae of *Aedes canadensis* noted in woodland pools in New Castle County March 7. (R. Lake).

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

No screw-worm specimens were submitted for identification during the period February 24 to March 2. This has been the longest period during which no screw-worm specimens have been identified since eradication efforts began in February 1962.

The warming trend in the release area, with no expectation of additional cold spells, makes it extremely critical that all incipient screw-worm infestations must be disclosed immediately to preclude any possible buildup of population in the Southwest. A total of 97,611,450 sterile screw-worm flies was released during the period February 24 to March 2. (Anim. Dis. Erad. Div.).



No screw-worm specimens submitted during period Feb. 24-March 2.

▬ ▬ ▬ - Limits of fly drop area

HOUSEHOLD AND STRUCTURAL INSECTS

BLACK CARPET BEETLE (*Attagenus piceus*) - NORTH CAROLINA - Infested wool carpet in a Cleveland County residence. (Robertson, Mar. 1). WISCONSIN - Reports of infestations beginning to increase. (Wis. Ins. Sur.).

LARDER BEETLE (*Dermestes lardarius*) - MICHIGAN - Adult sample collected in Ottawa County indicated infestation. (Dowdy).

CIGARETTE BEETLE (*Lasioderma serricorne*) - OKLAHOMA - Causing some concern in Lawton area, Comanche County. (Okla. Coop. Sur.).

CONFUSED FLOUR BEETLE (*Tribolium confusum*) - SOUTH DAKOTA - Pestiferous in a Kingsbury County home. (Mast).

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) - UTAH - Heavy in flour in home at Logan, Cache County. (Hanson, Knowlton).

INDIAN-MEAL MOTH (*Plodia interpunctella*) - OREGON - Infesting cereals in homes in Medford, Jackson County. (Berry).

A PSYCHID MOTH (*Apterona crenulella*) - UTAH - Cases extremely numerous on exterior of home at Logan, Cache County. (Knowlton).

FACE FLY (Musca autumnalis) - SOUTH DAKOTA - Reported as general pest in homes throughout eastern half of State. (Mast)

BOXELDER BUGS (Leptocoris spp.) - UTAH - L. trivittatus annoying in a number of homes in central area of State. (Knowlton). NEVADA - L. rubrolineatus causing concern to home and motel owners in Reno, Washoe County. (Lauderdale).

BROWN-BANDED COCKROACH (Supella supellectilium) - UTAH - Infesting several apartments in a building at Logan, Cache County. (Knowlton). WISCONSIN - Infestations being reported. (Wis. Ins. Sur.).

CLOVER MITE (Bryobia praetiosa) - NEVADA - Causing concern in homes in Reno, Washoe County. (Lauderdale). UTAH - Moderate numbers entering homes in Roosevelt, Duchesne County. (Knowlton). ARIZONA - Infesting some homes in Gila County. (Ariz. Coop. Sur.). NORTH CAROLINA - Infested exterior of home in Wake County. (Mount).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - DELAWARE - First swarms of R. flavipes of season noted March 6 in area of New Castle County. (MacCreary). MARYLAND - Reticulitermes sp. caused severe damage to a building in Langley Park, Montgomery County. Winged reproductive forms noted swarming in and around several homes in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.). FLORIDA - R. flavipes collected in Steiner trap in tangerine tree at Longwood, Seminole County, Feb. 18, and at Clearwater, Pinellas County, February 25. Det. by L. A. Hetrick. (Fla. Coop. Sur.). NEVADA - Unspecified species swarmed in southern Washoe County during last week of February. (Cooney).

PAVEMENT ANT (Tetramorium caespitum) - MARYLAND - Winged forms noted in a Howard County home March 6. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

Stored-product Insects in Oregon - Surveys of warehouses in the Willamette Valley during early March revealed large numbers of VETCH BRUCHID (Bruchus brachialis) on vetch seed at Harrisburg, Linn County, and infestations of RICE WEEVIL (Sitophilus oryzae) and RED FLOUR BEETLE (Tribolium castaneum) in grain at Eugene, Lane County. (Larson).

A PHYCITID MOTH (Ephestia sp.) - WISCONSIN - Reported infesting flax seed. (Wis. Ins. Sur.).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Limited activity of several species observed in alfalfa and wheat checked in southwest area. (Okla. Coop. Sur.).

DAMSEL BUGS (Nabis spp.) - OKLAHOMA - Becoming active in wheat and alfalfa checked in southwest area. (Okla. Coop. Sur.).

FLOWER FLIES - NEW MEXICO - Large numbers noted flying around grass and flowers in Valencia and Bernalillo Counties. (N. M. Coop. Rpt.).

AN ICHNEUMON (Banchus cressonii) - FLORIDA - Collected on Citrus sp. at Lake Jem, Lake County, February 20 by W. P. Henderson. This is the second representative of this internal parasite of caterpillars for the Florida State Collection of Arthropods. (Fla. Coop. Sur.).

MISCELLANEOUS INSECTS

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Infestations in Sacramento continue to extend area of known occurrence, indicating there have been "carry-outs" during time pest has been building up. Area of 15 square miles now involved, which will require treating approximately 1,000 city blocks. Eradicative treatment already applied to 300 blocks; delimiting survey and treatment continuing. Weather has been favorable for treatment; however, predicted rain could slow program materially for several days. Publicity has been good and public cooperation exceptional. (Cal. Coop. Rpt.).

LYGUS BUGS (Lygys spp.) - NEW MEXICO - Abundant on wild mustard in northern Dona Ana County. (N. M. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - Treatment of 52 acres in Earle, Crittenden County, ARKANSAS, completed. Eradication effort on 100 acres in Tuscaloosa County, ALABAMA, attempted. Larval specimens collected from 3 properties near infestation found at Destrehan, St. Charles Parish, LOUISIANA. (PPC, South. Reg., Jan. Rpt.).

JAPANESE BEETLE (Popillia japonica) - TENNESSEE - Treatments made with aircraft and ground equipment in areas of Blount, Cocke, Johnson, Loudon, Morgan and Roane Counties. (PPC, South. Reg., Jan. Rpt.).

POPLAR BORER (Saperda calcarata) - SOUTH DAKOTA - Specimen, tentatively determined as this species, found in home in Brookings, Brookings County, February 25. Presumably brought into house in poplar firewood. (Spawn).

EARWIGS - ARIZONA - Unspecified species continue a problem in all areas of central and southern protions of State. (Ariz. Coop. Sur.).

DRAIN FLIES - DELAWARE - Undetermined species common in school in New Castle County. (MacCreary).

IMPORTED FIRE ANT (Solonopsis saevissima richteri) - Survey in San Antonio, Bexar County, TEXAS, completed; approximately 250 acres found infested. Some extensions found in Union and Ashley Counties, ARKANSAS; inspections in other counties negative. Inspections and delimiting surveys made in 23 parishes in LOUISIANA indicate no new infestations, but some extensions of known areas. Infestation involving 25 sections found at new location in Sharkey County, MISSISSIPPI, and a small infestation found for the first time in Issaquena County. Appraisal surveys in ALABAMA continue to show good results. New infestation found in Hernando County, FLORIDA, and in Lamar County, GEORGIA. Surveys in NORTH CAROLINA negative except in Carteret County. Extensions of known infestations found in Charleston, Orangeburg and Horry Counties, SOUTH CAROLINA. (PPC, South. Reg., Jan. Rpt.).

ANTS - MICHIGAN - Winged Camponotus sp. adults emerged from infested quarters in Lansing area, Ingham County, March 8. Winged adults of Formica sp. collected in Detroit area, Wayne County. (Dowdy).

LIGHT TRAP COLLECTIONS

FLORIDA, Gainesville (March 4) - No collections of economic importance; Northeast Gainesville (March 5) - GRANULATE CUTWORM (Feltia subterranea) - 17.

GEORGIA, Tifton (Feb. 28-March 6) - No collections.

SOUTH CAROLINA, Charleston (March 4-10) - ARMYWORM (Pseudaletia unipuncta) - 7; FALL ARMYWORM (Laphygma frugiperda) - 1; YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - 3; BLACK CUTWORM (Agrotis ipsilon) - 4; GRANULATE CUTWORM - 10.

SUMMARY OF INSECT CONDITIONS - 1962

(continued from page 212)

TRUCK CROP INSECTS

Eggplant, Pepper, Potato and Tomato Insects

Highlights:

COLORADO POTATO BEETLE adults were extremely abundant on the Eastern Shore of Virginia, being almost unbelievably numerous in early June. Further north on the Delmarva Peninsula,Colorado potato beetle was recorded as light to heavy. Most other States indicated only locally heavy populations. Colorado potato beetle was a serious pest of potatoes in central Washington where treatment was required throughout the season. POTATO FLEA BEETLE caused extensive damage to potatoes in Ohio and on the Eastern Shore of Virginia. In the latter area, tuber damage was greater than any experienced in recent years. WESTERN POTATO FLEA BEETLE was responsible for considerable damage to potato tubers in the Gallatin Valley of Montana. Resistance to previously effective soil insecticides for control of TUBER FLEA BEETLE was noted in Oregon. EUROPEAN CORN BORER was more abundant in potatoes on the Virginia Eastern Shore than at any time since 1959. Locally in Indiana, 100 percent of the potato plants had borer infestations. TOMATO FRUITWORM was much heavier than usual in southern New Mexico. Infestations of LESSER CORNSTALK BORER in Georgia were more severe than in recent years; a number of crops including tomatoes and beans were damaged. APHIDS on solanaceous crops ranged light to heavy, but retreatment was necessary in Massachusetts for control of POTATO APHID. POTATO LEAFHOPPER was the most important insect attacking vegetables in Ohio, and continued to be one of the major insect pests in Indiana. A LEAFHOPPER (Empoasca filamenta) caused extensive damage in Oregon potato fields. The POTATO PSYLLID outbreak in Utah was the most severe in approximately 20 years. VINEGAR FLIES, particularly Drosophila melanogaster, continue to plague the canning industry. In Indiana, this species is the major insect problem confronting the canning industry. A SPRINGTAIL (Entomobrya unostrigata) caused severe damage in California to tomato plants.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) adults were extremely abundant on the Eastern Shore of VIRGINIA, being almost unbelievably numerous in the Painter-Nandua section, Accomack County, in early June. As many as 5 adults per plant were present. Most of the growers on the Eastern Shore were forced to treat three times, but they were successful in checking the chlorinated hydrocarbon-resistant adults with a carbamate or a phosphate. Emergence of the spring brood in Virginia was at a peak around June 12. Staggering of this brood resulted in considerable egg deposition, with the result that adults were quite numerous in some sections and caused damage by feeding on the harvested tubers in late June. Adults of the second brood were still causing considerable damage to some crops in mid-August. Pepper transplants were hard hit in some sections of the Eastern Shore of Virginia; some newly hatched larvae were observed in late September, indicating a partial third brood. In MARYLAND, Colorado potato beetle ranged light to heavy on potatoes and tomatoes. The heavier infestations occurred in home gardens. Eggplants in Montgomery County, Maryland, were also infested. Generally, Colorado potato beetle was under good control in most large commercial acreages of potatoes in DELAWARE; large populations were observed only on small truck farms on potatoes and tomatoes in that State. Adults in NEW JERSEY were abundant and laying eggs in New Brunswick area, Middlesex County, and in Burlington County on May 22. Colorado potato beetle was of great concern to commercial potato growers in Kent, Washington and Newport Counties, RHODE ISLAND, in late May. Hungry, roaming adults nipped shoots that emerged late due to drought. Hatching was evident in the State by June 15. Controls in Rhode Island were effective during the season. The beetle was serious in nontreated fields in CONNECTICUT and normal on Long Island, NEW YORK. However, populations of Colorado potato beetle were lighter than normal in upstate New York.

Only light infestations of Colorado potato beetle were reported in GEORGIA. These were, however, on commercial tomatoes in the southern area. Populations of the pest caused light to moderate damage to potatoes in south central TEXAS, and light to moderate numbers were present on potatoes in southeast MISSOURI. Also in the latter State, light infestations were observed on widely scattered potato patches in the central and southwestern areas.

Colorado potato beetle in NORTH DAKOTA generally caused little concern during 1962. Sporadic infestations occurred in Park and Fremont Counties, WYOMING, but controls were required only on a few potato fields. Damage was considered very light in nearly all areas. This species apparently infested potatoes for the first time in Cache County, UTAH; statewide it was considered more abundant and/or more damaging than normal. Colorado potato beetle became the most serious pest of potatoes in central WASHINGTON where it required treatment throughout the season. Small numbers were observed in Malheur County, OREGON, in potato fields during June. Light infestations were also noted in potatoes in the Powell-Butte area of Crook County in early July. The edges of the fields showed the most damage in this latter area.

POTATO FLEA BEETLE (Epitrix cucumeris) was reported feeding on all solanaceous crops throughout the State of MAINE in early June. It was heavy on tomatoes in the Sacro-Wells area, York County. Summer generation adults were present. in moderate numbers, causing moderate damage to eggplants in the Monmouth area, Kennebec County, in late August. The beetle was common on potatoes in RHODE ISLAND and a buildup appeared likely in late July, but it was not a problem in commercial fields. Potato flea beetle was numerous to abundant on potatoes in some areas of Kent and Sussex Counties, DELAWARE, by mid-May. Feeding injury was very noticeable in several large fields. Epitrix spp. were again abundant and troublesome on eggplants and potatoes in all sections of MARYLAND. Newly transplanted tomatoes and peppers on the lower Eastern Shore were held back by TOBACCO FLEA BEETLE (E. hirtipennis). Potato flea beetle was relatively light on the Eastern Shore of VIRGINIA and never did cause much foliage damage. However, tuber damage was heavier than any experienced in recent years. Quite a few potatoes were rejected by State Inspectors and some potatoes were turned down on arrival at out-of-State destinations. Potato flea beetle caused extensive damage to potatoes in OHIO where the crop had not been treated adequately. Adult feeding injury began appearing in WISCONSIN on tomato and potato crops near the end of May. Populations remained relatively low in most areas, and the second generation, which commenced about the last week of July, was also low in numbers. The beetle was of little concern in NORTH DAKOTA.

Unspecified FLEA BEETLES were very abundant on potatoes and tomatoes in PENNSYLVANIA, prevalent on potatoes in CONNECTICUT, and a problem on potatoes in Torrance County, NEW MEXICO.

TUBER FLEA BEETLE (Epitrix tuberis) populations of 50-100 per 100 sweeps developed in COLORADO on potatoes in Montrose County early in July. Controls were recommended and no loss has been reported. In UTAH, both the potato flea beetle and the WESTERN POTATO FLEA BEETLE (E. subcrinita) were approximately normal in numbers and/or injury. This latter species in MONTANA was responsible for considerable damage to potato tubers in the Gallatin Valley during the past several years. Tobacco flea beetle was heavy and damaging to tomato plantings in San Benito County, CALIFORNIA, and light to medium in Butte County, same

State. In OREGON, tuber flea beetle has exhibited resistance to previously effective chlorinated hydrocarbon soil insecticides in one area of Clackamas County.

Undetermined WIREWORMS damaged potatoes in the Fairbanks area of ALASKA, and a wireworm (Cardiophorus sp.) infested tomatoes and potatoes in many locations of CALIFORNIA. Preplant crops were used in several areas of the latter State. SOUTHERN POTATO WIREWORM (Conoderus falli) was abundant in SOUTH CAROLINA on potatoes, but control efforts resulted in satisfactory commercial production. A BLISTER BEETLE (Meloe sp.) was present in moderate numbers on tomatoes in South Kingstown and Narragansett, Washington County, RHODE ISLAND, in September; and some other BLISTER BEETLES (Epicauta spp.) were again common on many crops in INDIANA, especially on tomatoes and potatoes in localized areas. DARKLING BEETLES (Blapstinus sp. and Metoponium sp.) damaged tomatoes in Yolo County, CALIFORNIA.

EUROPEAN CORN BORER (Ostrinia nubilalis) egg masses were common in DELAWARE on pepper seedlings, potatoes and weeds by May 15. Borer infestations in main stems of untreated pepper transplants averaged 15 percent. Late-season borer infestations in mature pepper pods from untreated plots averaged only 10 percent in Sussex County, Delaware. Entries in potatoes and peppers on the lower Eastern Shore of MARYLAND were below normal. The first entries were noted July 25 in Worcester County; little, if any, treatment was applied. More borers were present on potatoes on the Eastern Shore of VIRGINIA than any year since 1959. European corn borer infestation in an area of Jasper County, INDIANA, was 100 percent in potatoes. The overall average was 27 percent infestation and 32 borers per 100 plants. Egg masses were found on peppers in WISCONSIN on August 6 in Marquette County. They were found in Walworth County on August 13. Egg incidence was low and the degree of larval infestation appeared minor.

TOMATO FRUITWORM (Heliothis zea) was relatively scarce throughout the State of NEW HAMPSHIRE. Great concern was excited statewide in RHODE ISLAND due to damage to peppers and tomatoes by the STALK BORER (Papaipema nebris). In MARYLAND, BLACK CUTWORM (Agrotis ipsilon) caused moderate injury to late potato tubers in Wicomico and Worcester Counties. CABBAGE LOOPER (Trichoplusia ni) locally infested tomatoes in that State. Cocoons on tomatoes caused a removal problem in a cannery at Baltimore, Maryland. This same species caused some damage to trellised tomatoes in Northampton County, VIRGINIA. Larvae caused rather heavy damage to fall potatoes in northern Accomack County on the Eastern Shore of Virginia in September.

Tomato fruitworm was light to moderate on tomatoes in GEORGIA, caused heavier than usual damage to tomatoes in LOUISIANA and tomato fruits in Zavala County, TEXAS, were severely damaged. Tomato fruitworm was much heavier than usual in NEW MEXICO, and caused severe damage in tomato and chili fields, especially in southern counties. Tomato fruitworm was below average in numbers and in importance in UTAH, and it was present in only light to moderate numbers on tomatoes in COLORADO where it did no damage. Damage in CALIFORNIA was probably not as great as in 1961; tomatoes and peppers were infested.

HORNWORMS (Protoparce spp.) ranged light to heavy on commercial tomatoes in south GEORGIA; caused spotted, medium to heavy damage throughout Westmoreland County, VIRGINIA; and caused conspicuous damage to several tomato fields near harvest in MARYLAND in Talbot County. They were also light to moderate on peppers and tomatoes on the lower Eastern Shore of Maryland. Hornworms were about average abundance in RHODE ISLAND in mid-August. TOBACCO HORNWORM (Protoparce sexta) caused little damage in INDIANA to tomatoes. Fewer larvae were observed on plants and adult flight numbers were down. Protoparce spp. caused some damage to tomato foliage in NORTH DAKOTA in the Jamestown area of Stutsman County, and caused considerable damage to tomato foliage in TEXAS. They were present in trace numbers on tomatoes in COLORADO, and approximately normal in numbers and/or damage in UTAH during the season. Hornworms ranged light to medium in most tomato-growing areas of CALIFORNIA.

POTATO TUBERWORM (Gnorimoschema operculella) appeared on fall potatoes on the Eastern Shore of VIRGINIA and caused rather severe damage to the foliage in late September. Potato tuberworm was below average in numbers and importance in UTAH. In CALIFORNIA, light to heavy populations developed in most of the potato-growing areas from Santa Barbara County southward. Also in California, TOMATO PINWORM (Keiferia lycopersicella) was locally medium to heavy in tomatoes in Solano and San Diego Counties. Tomato pinworm caused light damage to tomato foliage and fruits in Cherokee County, TEXAS.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) infestations in GEORGIA were heavy on a number of crops including tomatoes. Infestations were more severe than in recent years. SALT-MARSH CATERPILLAR (Estigmene acrea) occurred statewide in CALIFORNIA and it was damaging to tomatoes.

An APHID (Hyalopterus atriplicis) was the main species collected in water traps in ALASKA potato fields.

GREEN PEACH APHID (Myzus persicae) was abundant on potatoes in WASHINGTON near Zillah, Yakima County, where it required treatments in early June. No treatments were needed in Columbia Basin areas until two to three weeks later. Leaf counts in COLORADO averaged fewer than 10 per leaf on potatoes. Green peach aphid was very heavy in several pepper fields in DELAWARE where control measures were not adequate from mid-July to September. It was common to abundant at various times throughout the season on tomatoes, potatoes and other crops in that State. The aphid ranged generally light to moderate on peppers on the Eastern Shore of MARYLAND, and it was light to moderate on potatoes and eggplants at Fairland, Montgomery County, during September. Green peach aphid ranged moderate to heavy in PENNSYLVANIA potato fields; common but controlled in commercial potato fields in RHODE ISLAND; was abundant on potatoes, peppers and eggplants in OHIO; and was abundant during August and September in CONNECTICUT.

POTATO APHID (Macrosiphum euphorbiae) developed to light numbers on potatoes in Siskiyou County, CALIFORNIA. This species was below normal for the year in UTAH and was not an important species. Potato aphid populations in western COLORADO and in the San Luis Valley of that State were light to heavy on potatoes depending on the location of the fields in relation to the naturally occurring host plants. Potato aphid caused concern in TEXAS in the Winter Garden area of Dimmit County, and caused considerable damage in MASSACHUSETTS where it required additional treatments in many cases. This species was common in RHODE ISLAND, but controlled in commercial potato fields. Potato aphid was generally under good control on potatoes in most areas of DELAWARE. Heaviest numbers occurred on tomatoes in New Castle County during early July. This aphid occurred on potatoes in Montgomery and Worcester Counties, MARYLAND, and was fairly abundant in PENNSYLVANIA potato fields.

Unspecified APHIDS were spotty in CONNECTICUT, but they carried virus to some crops, especially tomato and vine crops. Aphids were heavy on potatoes.

Unspecified LEAFHOPPERS were present on the VIRGINIA Eastern Shore in June on potatoes. They were especially troublesome where the potatoes were held for potato chip use. Several species of leafhoppers severely damaged potatoes in the Winter Garden area of TEXAS, and they were very abundant in CALIFORNIA where light to heavy populations occurred on potatoes.

Populations of POTATO LEAFHOPPER (Empoasca fabae) increased significantly in MARYLAND, and economic numbers were common on untreated potatoes in most sections. The leafhopper was common on potatoes in RHODE ISLAND throughout the season with some buildup noted around August 1. Potato leafhopper was the most important insect attacking vegetables in OHIO where it caused serious damage to potatoes, peppers, eggplants and other crops; and it was destructive to potatoes in INDIANA. In MICHIGAN, this species was present, but it caused no serious problems in 1962. Potato leafhopper built up to moderate numbers in MISSOURI during late May and early June. Both nymphs and adults were reported feeding on potatoes in the southeast area at that time. Potato leafhopper was not of much concern in NORTH DAKOTA during the 1962 season, and was approximately normal in both numbers and/or injury in UTAH.

BEET LEAFHOPPER (*Circulifer tenellus*) infected 12 percent of the tomato plants in western COLORADO with western yellow blight, and caused a loss of production of 3-4 percent.

A LEAFHOPPER (*Empoasca filamenta*) caused extensive damage in OREGON to foliage in Malheur County potato fields from midseason when it caused early maturity of the plants. Control was necessary in most fields. Where it was not controlled, *E. filamenta* was still active September 15.

A WHITEFLY (*Aleyrodes spiraeoides*) was less prevalent than usual in WASHINGTON and it did not become a serious pest of the fall crop of potatoes in the central area. WHITEFLIES were pests of peppers and tomatoes over the State of CALIFORNIA. Various species were more abundant in occurrence in 1962 than in former years. A WHITEFLY (*Trialeurodes* sp.) was heavy on potatoes, tomatoes and eggplants in the Winter Garden area of Dimmit County, TEXAS.

POTATO PSYLLID or TOMATO PSYLLID (*Paratrioza cockerelli*) population pressure was greater than normal on potatoes in ARIZONA during March, April and May when infestations became heavy in some untreated fields. In UTAH, the early season outbreak of this species was the most severe and extensive to occur in approximately 20 years. Damage in Utah decreased markedly about the time the hot, summer weather arrived. In WYOMING, potato psyllid was first reported in Goshen County on June 17, but it was not found until 3 weeks later in the Big Horn Basin. Populations of potato psyllid did not reach the proportions that they were expected to reach and were generally smaller than those of 1961. Some damage occurred on late-planted potatoes in Goshen and Laramie Counties, Wyoming. In COLORADO, potato psyllid was found on *Lycium* sp. early in the season and, as new potato plants emerged, this psyllid was found on potatoes at counts of 2-10 per 100 sweeps. Prevailing hot weather in Colorado and early application of control measures prevented a population buildup and loss of potato yields. Tomato psyllid was present on tomatoes in economic numbers but no loss was reported in Colorado. Light infestations of potato psyllid occurred in NEBRASKA on *Lycium halimifolium*, potato culls, and early potatoes in Scotts Bluff County from May to July.

STINK BUGS damaged tomato fruits in both SOUTH CAROLINA and CALIFORNIA. In the latter State, tomato fields had heavy to medium numbers in several locations. SOUTHERN GREEN STINK BUG (*Nezara viridula*), BROWN STINK BUG (*Euschistus servus*) and *E. obscurus* were noted in LOUISIANA where all three species caused less than the usual amount of damage to tomatoes. LEAF-FOOTED BUG (*Leptoglossus phyllopus*) also caused less damage than usual in Louisiana to tomatoes.

TARNISHED PLANT BUG (*Lygus lineolaris*) seemed somewhat in excess of normal level in MAINE; moderate infestations were reported from Cumberland, Oxford, Androscoggin and Sagadahoc Counties where it caused light to moderate damage to peppers. In June, tarnished plant bug adults and nymphs caused moderate amounts of leaf curl and necrosis to 7 acres of potatoes in Wicomico County, MARYLAND.

TOMATO RUSSET MITE (*Aculus lycopersici*) was not the general problem over the State of CALIFORNIA that it was in 1961. Local, light to medium infestations developed on tomatoes in Sacramento, Santa Barbara and Merced Counties. This and other mites in general were slow in starting, but developed damaging populations in California, with some serious effects as infestations went unnoticed in many crops due to the type of weather. Tomatoes and eggplants were affected to varying degrees. A late buildup of tomato russet mite was noted in

NEW MEXICO on tomatoes, which caused considerable damage to tomato foliage in Luna County. No infestations of tomato russet mite were observed in tomato fields in UTAH. SPIDER MITES were a problem on tomatoes and potatoes in local areas of central and south central TEXAS. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) developed on eggplants in many areas of OHIO.

VINEGAR FLIES (Drosophila spp.) developed earlier than usual on tomatoes in NEW YORK. Vinegar flies were very heavy during August, but quite light in September. Vinegar flies became a problem on the Eastern Shore of MARYLAND in the summer where several large growers had to apply controls. In INDIANA, D. melanogaster continues to be the major insect problem confronting the canning industry. Even though some fields had been treated in that State with an insecticide on a 3-day schedule, adult populations and egg deposition in baits were quite high in late September. D. melanogaster was not the pest it had been in past years in CALIFORNIA due to sanitation and control used on tomato and fruit dumps.

A LEAF MINER FLY (Liriomyza sp.) was especially troublesome in TEXAS in both the Winter Garden, Dimmit County, and the lower Rio Grande Valley areas; these are two of the major vegetable-growing areas of Texas. Unspecified leaf miner flies caused less damage to tomatoes in SOUTH CAROLINA than in the past. Probably several species of leaf miner flies were involved in DELAWARE which were in tomato foliage during late July and early August.

PEPPER MAGGOT (Zonosemata electa) caused considerable injury to eggplant fruits in PENNSYLVANIA.

A THRIPS (Frankliniella occidentalis) and ONION THRIPS (Thrips tabaci) were variable on tomatoes and peppers in TEXAS, but they required control in scattered plantings within several areas of the State. Onion thrips was the most prevalent thrips of truck crops in CALIFORNIA; it occurred on peppers and other crops. Several species of thrips were abundant in MARYLAND on peppers.

GRASSHOPPERS damaged seedling tomatoes in NEW MEXICO at Deming, Luna County, during early May. Some damage resulted from grasshopper invasions into crops in CALIFORNIA, but this was minimal statewide. Light damage occurred in some tomato fields.

A SPRINGTAIL (Entomobrya unostrigata) caused severe damage to seedbed tomatoes and to field sets of young plants in Yolo County, CALIFORNIA.

Bean, Pea and Other Legume Insects

Highlights:

MEXICAN BEAN BEETLE damage continued relatively heavy in most of the States reporting, with lighter populations and damage on the geographic limits of this pest. In Idaho, an eradication program got underway on June 29. The only serious infestations of Mexican bean beetle in Wyoming are confined to Platte County. Mexican bean beetle, which was first reported in Kansas in 1961, has now been collected in Doniphan County for the first time. Other important beetle pests of legumes were BEAN LEAF BEETLE, WESTERN SPOTTED CUCUMBER BEETLE, PEA LEAF WEEVIL, COWPEA CURCULIO and PEA WEEVIL. The last species was collected for the first time in Skagit County, Washington. NOCTUID MOTHS were important, especially in peas grown for canning, in Washington, Oregon and Wisconsin. However, PEA MOTH development in Washington was delayed 2-3 or more weeks and it was not present in June and July. APHIDS were generally well controlled on legumes. LEAFHOPPERS, particularly POTATO LEAFHOPPER, were serious pests of beans on the Eastern Shore of Maryland and Virginia, and in Ohio, Indiana and Missouri. A SMINTHURID SPRINGTAIL (Onychiurus pseudarmatus) prevented emergence of pole beans in the Puyallup Valley of Washington.

GARDEN SYMPHALAN continues to be the worst general pest of vegetables in southwestern Washington, and it is one of the most important pests in the irrigated areas of Oregon. It is estimated that annual losses exceeding several million dollars may be attributed to this arthropod in Oregon.

MEXICAN BEAN BEETLE (Epilachna varivestis) was moderate to heavy on southern peas and beans in GEORGIA. In SOUTH CAROLINA, the beetle was especially damaging to home garden beans, but less so than ten years ago due to improved insecticide use. This species was first reported on beans in NORTH CAROLINA in late May, and it continued to feed on this crop throughout the summer. Untreated beans in North Carolina were skeletonized. Mexican bean beetle was present in VIRGINIA on beans early in the season on the Eastern Shore. For the second year, numbers of this species were above normal on beans in MARYLAND. Treatment of considerable commercial acreages was necessary. Adults and larvae were abundant in untreated fields of beans in eastern Sussex County, DELAWARE, from early June to late August, and the pest caused some damage to beans in NEW JERSEY in late June. Mexican bean beetle population remained very light in NEW YORK as it had for the last 4-5 years, but it was increasing in CONNECTICUT by June 15. Adults were evident in RHODE ISLAND at the end of June in Kingston, Washington County, and Warwick, Kent County. They continued present most of the summer. Mexican bean beetle was relatively scarce in NEW HAMPSHIRE.

Mexican bean beetle is under eradicative program in IDAHO. Eradication effort was underway June 29 in that State. Populations were very small in WYOMING in 1962 except in Platte County. As a result of application of controls in most bean fields in the county, little damage occurred. This is the second straight year that the only serious infestation in Wyoming occurred in Platte County. Mexican bean beetle was more abundant and/or more damaging than normal in UTAH, but was extremely heavy in NEW MEXICO where it damaged foliage and often killed bean plants in Espanola Valley, Torrance County, and in Rio Arriba and Santa Fe Counties. Damage to beans in COLORADO has been light this past season. Drought, hail and rain during harvest of dry beans caused a greater loss than did this insect. Mexican bean beetle ranged 0-4 per 10 plants in the Arkansas Valley of Colorado and 1-2 per 100 feet of row on the Western Slope. It did not develop appreciably, and controls kept this and other insects at low levels. Mexican bean beetle was first reported in KANSAS in 1961. This species was found for the first time in Doniphan County in 1962 for a new county record. It caused considerable damage to bean plants in the northeast area of Kansas. Light to moderate numbers of Mexican bean beetle caused some damage to beans in central, west central and north central MISSOURI during the growing season. Infestations in ARKANSAS were somewhat more common than normal, but infestations were below normal in OHIO.

BEAN LEAF BEETLE (Cerotoma trifurcata) adults were observed in scattered, large populations on green beans in several areas of DELAWARE during May. Adults caused light to heavy foliage injury to both early and late snap beans on the Eastern Shore of MARYLAND. Some damage to beans occurred in VIRGINIA early in the season. In GEORGIA, bean leaf beetle was moderate to heavy on peas and lima, pole and snap beans. Light numbers of bean leaf beetle were observed throughout the State of MISSOURI on snap beans, and the species damaged beans in northeast KANSAS during the year.

STRIPED FLEA BEETLE (Phyllotreta striolata) remained about the same as it was in 1961 in WYOMING. Light damage occurred on beans in most of the bean-producing areas of the State.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) damaged Romano pole beans, a new variety, in southwestern WASHINGTON, by biting the pod and causing cullage of 0-6 percent. Adult populations were much lower than in 1961. A LEAF BEETLE (Diabrotica sp.) was medium in bean fields in Orange and Yolo Counties, CALIFORNIA.

PEA LEAF WEEVIL (Sitona lineata) damaged peas in the Quincy area of Grant County, WASHINGTON, during the early spring. COWPEA CURCULIO (Chalcodermus aeneus) was a serious problem on southern peas in the lower Rio Grande Valley of TEXAS, and this species caused damage to peas in home gardens in VIRGINIA. PEA WEEVIL (Bruchus pisorum) was collected for the first time in Skagit County, WASHINGTON, at La Conner. This bruchid lightly infested fields in the Blue Mountains area of Umatilla County, OREGON; it was present in normal numbers in the Willamette Valley pea acreages, but controls were effective. In NEW YORK, pea weevil again remained at a very low level.

ALFALFA LOOPER (Autographa californica) was abundant on processing peas in Skagit County, WASHINGTON, during July. The first flights were recorded during April in Walla Walla area, Walla Walla County, where larvae severely damaged peas in June. In OREGON, adult and larval activity was extreme in Umatilla County in pea acreages from mid-May. Adults appeared in numbers by June 10 at Milton-Freewater. Larvae were found in the field from June 19 through pea harvest. Control effectiveness was hampered by heavy vine growth and unfavorable weather. TOMATO FRUITWORM (Heliothis zea) larvae infested beans in CALIFORNIA; damage was probably not as great as in 1961, however.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was more severe in GEORGIA than in recent years. This phycitid was a serious pest of beans, peas and other vegetables. Lesser cornstalk borer was locally destructive on late-planted home garden beans and southern peas in SOUTH CAROLINA. Light to medium populations developed on string beans in CALIFORNIA late in the season in Orange County.

LIMA-BEAN POD BORER (Etiella zinckenella) damaged lima beans in Quincy area, Grant County, Columbia Basin, WASHINGTON. Damage ranged from 10 to 20 percent. This is the first record of damage in the irrigation project. Very light infestations developed in CALIFORNIA on lima beans in Orange County.

PEA MOTH (Laspeyresia nigricana) development was delayed 2-3 or more weeks in WASHINGTON. It was not present during June and July. Infestation was found in wild hosts in Skagit County, Washington, during late fall, and oviposition continued into October.

SALT-MARSH CATERPILLAR (Estigmene acrea) occurred statewide in CALIFORNIA where it was damaging to beans and other crops. Use of barrier strips prevented considerable damage from migrating larvae.

GREEN STINK BUG (Acrosternum hilare) caused damage to beans in VIRGINIA home gardens. STINK BUGS caused spotted damage to bean pods in SOUTH CAROLINA. SOUTHERN GREEN STINK BUG (Nezara viridula), BROWN STINK BUG (Euchistus servus), E. obscurus and LEAF-FOOTED BUG (Leptoglossus phyllopus) caused less than the usual amount of damage to cowpeas and beans in LOUISIANA.

LYGUS BUGS (Lygus spp.) caused light damage in WYOMING where they attacked beans in the southern part of the State. Numbers were considerably larger in 1962 than those of 1961. No specific controls were applied in Wyoming.

PEA APHID (Acyrthosiphon pisum*) was present on peas in NEW YORK, but it was lighter than usual. It was fairly abundant on peas in PENNSYLVANIA and control measures were necessary in some fields. By the first week of May, pea aphid was fairly common in DELAWARE on peas in Sussex County and, by mid-May, counts of the aphid in several large, untreated fields averaged over 40 per sweep. The applied controls for pea aphid in Delaware appeared adequate in most areas. Pea aphid in WISCONSIN appeared as winged forms in peas the fourth week of May, which is about one week later than in 1961. Populations seldom reached the point where controls were needed and it was generally less of a problem than in 1961. In OREGON, populations of pea aphid were held in check in the Umatilla County area by looper controls.

* See CEIR 13(5):84.

BEAN APHID (Aphis fabae) was heavy in commercial lima beans in PENNSYLVANIA, and the aphid increased generally over 1961 on lima beans in areas of New Castle and Kent Counties, DELAWARE, especially from mid-July to late August. Bean aphid was numerous on beans in several gardens in the Ogden area of Weber County, UTAH, during the summer, but was generally normal in numbers and/or damage in the State. The aphid was not so prevalent in CALIFORNIA as in other years. Light to medium populations were experienced in bean plantings in Orange and Merced Counties. Bean aphid began to appear in the Willamette Valley of OREGON in pea fields the first week of July. Colonizing was sufficient that controls were required by July 15. Bean aphid damage was noted in untreated bean fields in western WASHINGTON.

POTATO LEAFHOPPER (Empoasca fabae) increased significantly in MARYLAND and economic infestations were common on untreated beans in most sections of the State. LEAFHOPPERS were present and increasing on beans in VIRGINIA in late June on the Eastern Shore. Potato leafhopper remained light to moderate in NEW YORK on beans. In OHIO, this leafhopper was the most important insect attaking vegetable crops during 1962. It caused serious damage to beans. Potato leafhopper also continues to be one of the major insect pests of the State of INDIANA; it was destructive to beans in 1962. Moderate numbers of adults and nymphs were reported feeding on snap beans in MISSOURI during late May and early June in the southeast area.

CLOVER MITE (Bryobia praetiosa) locally attacked beans in Orange and San Diego Counties, CALIFORNIA. SPIDER MITES were moderate to heavy on various hosts in NEVADA, especially corn and beans. Statewide, spider mites reached peaks in July-September period. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was common in central and northern UTAH beans in the late summer. The damage was sometimes severe. In COLORADO, large populations of this species developed on dry beans in some fields in Weld County. Spider mites were a problem locally on southern peas and beans in central and south central TEXAS. Two-spotted spider mite was very heavy on bean foliage in Washington County, RHODE ISLAND, in mid-August. The heaviest spider mite infestations developed statewide in DELAWARE on lima beans during late July. Two-spotted spider mite developed on beans in many areas of OHIO.

ONION THRIPS (Thrips tabaci) was the most prevalent thrips in truck crops in CALIFORNIA where it attacked beans and other crops. BEAN THRIPS (Hercothrips fasciatus) was also present over a wide area in California. It was a pest of beans in Yolo County where medium numbers occurred. Bean thrips appeared in approximately normal numbers and/or injury in UTAH. Several species of thrips were abundant on beans in MARYLAND.

A LEAF MINER FLY (Liriomyza sp.) was especially troublesome on beans and southern peas in TEXAS in both the Winter Garden, Dimmit County, and the lower Rio Grande Valley areas.

SEED-CORN MAGGOT (Hylemya cilicrura) damaged beans in Prairie County, MONTANA, and seriously damaged bean plantings in the Willamette Valley of OREGON.

A SMINTHURID SPRINGTAIL (Onychiurus pseudarmatus) prevented emergence of pole beans in the Puyallup Valley of WASHINGTON.

GARDEN SYMPHALAN (Scutigerella immaculata) continues to be the worst general pest attacking vegetables and small fruits in southwestern WASHINGTON; it even damaged pole beans in treated soil and continued to damage plants later than usual, probably due to the very cool, wet spring.

Beet, Sugar Beet and Spinach Insects

Highlights:

Most of the NOCTUID MOTHS reported were not serious on sugar beets, although some loss was reported. YELLOW-STRIPED ARMYWORM caused widespread heavy loss to spinach in Texas. BEET WEBWORM was remarkably low in major sugar beet areas. Light to moderate numbers were reported only from western Colorado. SUGAR-BEET CROWN BORER did cause local, severe damage in California. APHIDS were troublesome on sugar beets and spinach in many States. GREEN PEACH APHID was extremely numerous on sugar beets near peach orchards in Washington. This species developed the worst infestations ever recorded locally in California on sugar beets and spinach. Two major truck garden areas in Texas were severely hit by green peach aphid where populations were heavy enough to kill spinach plants. BEET LEAFHOPPER transmitted curly top to sugar beets in three counties in Wyoming; a reduction of 2-3 tons per acre was recorded in one of these counties. WESTERN POTATO FLEA BEETLE severely damaged or destroyed approximately 500 acres of sugar beets in Montana. A WEEVIL (Cosmobaris americana) seriously damaged or destroyed large acreages of sugar beets in California. TWO-SPOTTED SPIDER MITE caused excessive damage to row crops in Washington. When potatoes ripened prematurely,sugar beets were seriously infested by this species.

ARMY CUTWORM (Chorizagrotis auxiliaris) development was light in sugar beet planting in the Antelope Valley, Los Angeles County, CALIFORNIA. Mass invasions in 1961 indicated that this noctuid might be a severe pest in 1962,but infestations did not develop. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) and ZEBRA CATERPILLAR (Ceramica picta) caused light damage to sugar beets in Churchill County, NEVADA, in July. ALFALFA LOOPER (Autographa californica) larvae moved into adjoining sugar beet fields in WYOMING when controls were applied on alfalfa. Various CUTWORMS caused some loss to sugar beets in COLORADO in individual fields in Mesa County. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) caused widespread, heavy damage in TEXAS to spinach. CABBAGE LOOPER (Trichoplusia ni) locally infested spinach in MARYLAND.

BEET WEBWORM (Loxostege sticticalis) was very low in numbers in MINNESOTA, with only an occasional larva found on early planted sugar beets in the Red River Valley. Although beet webworm was fairly high in numbers of adults in the field and in light traps in NORTH DAKOTA, little or no larval feeding on sugar beets was reported or observed. Populations were far below those present in 1961 in WYOMING; very little damage to sugar beets was found and then only in a few fields. It was also below average in numbers and importance in UTAH. Economic populations did not occur in eastern COLORADO on sugar beets. Light to moderate populations did occur in the western part of the State. BEET ARMYWORM (Spodoptera exigua) developed in central ARIZONA on sugar beets.

SUGAR-BEET CROWN BORER (Hulstia undulatella) caused local, severe damage in CALIFORNIA on sugar beets in the Antelope Valley of Los Angeles County. In UTAH, this pest was below average in importance and numbers.

GREEN PEACH APHID (Myzus persicae) was extremely numerous on sugar beets near peach orchards in WASHINGTON, but scarce in the Columbia Basin. Populations were much lower than normal in Quincy area, Grant County, presumably because of the abandonment of large peach orchards in Crescent Bar area south of Wenatchee. Green peach aphid was general on most truck crops in CALIFORNIA and required control a greater part of the year. Sugar beets and spinach had the worst infestations ever recorded in the Soledad area, Monterey County. Infestations of green peach aphid on sugar beets in NEVADA were above the 1961 level in Clark County, but lighter than normal. Peak populations occurred in

March and April. Green peach aphid was present and increasing in VIRGINIA on commercial plantings in late April on the Eastern Shore, but most of the spinach had been harvested. There were no rejections because of aphids. The infestations on planting at the Painter Station, Accomack County, were essentially eliminated by a disease or fungus. On the Eastern Shore of MARYLAND, populations ranged light to moderate on spinach during September. Green peach aphid was dommon in DELAWARE throughout the season on spinach. A very heavy population developed in NEW YORK on the fall spinach crop. Green peach aphid was heavy enough to kill some spinach plants in both Winter Garden, Dimmit County, and the lower Rio Grande Valley areas of TEXAS.

BEET LEAFHOPPER (Circulifer tenellus) transmitted curly top to sugar beets in Washakie, Big Horn and Hot Springs Counties, WYOMING. The first infected plants were found in late June, but the first beet leafhopper was not picked up until July 17. Although infection in Wyoming was not as high as in 1961, reductions of 2-3 tons per acre occurred in Washakie County. Economic populations did not occur in eastern COLORADO, but beet leafhopper was light to moderate in numbers in western Colorado, with the incidence of curly top at 1-5 percent. In UTAH, beet leafhopper was below average in numbers and importance. LEAFHOPPERS were very abundant in CALIFORNIA where light to heavy populations occurred on sugar beets. Curly top symptoms on spinach in TEXAS in the Winter Garden area, Dimmit County, were minimal.

BUFFALO TREEHOPPER (Stictocephala bubalus) invaded sugar beet plantings in fairly heavy numbers in the Imperial Valley of CALIFORNIA, Imperial County.

WESTERN POTATO FLEA BEETLE (Epitrix subcrinita) larvae attacked sugar beet seedlings in MONTANA in Richland County. Approximately 500 acres were severely damaged or destroyed. High soil moisture content resulting from frequent, heavy rains caused the larvae to feed at or near the surface when they normally feed on the rootlets. Sugar beet fields in Montana, which had been in alfalfa or beans the previous year, were the only fields infested. STRIPED FLEA BEETLE (Phyllotreta striolata) populations were about the same as in 1961 in WYOMING. Some damage was done to sugar beets during May and June in Goshen County and in the Big Horn Basin. SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) caused some leaf damage to spinach in the Winter Garden area, Dimmit County, TEXAS.

SEED-CORN BEETLE (Agonoderus lecontei) caused some damage to sugar beets in Prowers County, COLORADO.

A WEEVIL (Cosmobaris americana) occurred on sugar beets in CALIFORNIA in heavy numbers in the Stockton area of San Joaquin County. This is the only location where this weevil was reported in the State. Large acreages of sugar beets were seriously damaged and some acreage was a total loss.

SPINACH LEAF MINER (Pegomya hyoscyami) caused damage to spinach in Walla Walla, Walla Walla County, WASHINGTON. This species built up in Marion County, OREGON, beet fields through midsummer. Spinach leaf miner was approximately normal in numbers and/or injury in UTAH. In WYOMING, this muscid fly was more numerous on sugar beets in 1962 than in the past several years. However, little damage is done by the feeding of the larvae and for that reason it is not considered a serious crop pest.

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) in UTAH remained at approximately normal numbers and/or injury. Economic populations on sugar beets in COLORADO did not occur in the eastern part of the State. In Walsh and Grand Forks Counties, NORTH DAKOTA, sugar beets were damaged in areas.

LYGUS BUGS (Lygus spp.) caused some damage to sugar beets in all areas of WYOMING where that crop is grown. Populations were considerably larger than those present in 1961, but no specific controls were applied.

BANDED GREENHOUSE THRIPS (Hercinothrips femoralis) developed medium populations on sugar beets in Yolo County, CALIFORNIA. ONION THRIPS (Thrips tabaci) also occurred on sugar beets in California.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) caused excessive damage to row crops in WASHINGTON in the Columbia Basin, but less than in previous years due to the cool season. Development of this species was delayed 2-3 or more weeks. Potatoes were ripened prematurely and sugar beets were heavily infested. Sugar beets were affected by MITES in varying degrees in CALIFORNIA.

Crucifer Insects

Highlights:

NOCTUID MOTHS, particularly CABBAGE LOOPER, were again abundant on crucifers in many areas of the country, but controls were generally good except in Georgia where some control difficulty was encountered. IMPORTED CABBAGEWORM and DIAMONDBACK MOTH were two other serious lepidopterous pests of crucifers throughout much of the United States. Large numbers of RED TURNIP BEETLE caused considerable damage to crucifers in Alaska. CABBAGE SEEDPOD WEEVIL resistance to one of the standard control chemicals appears to be developing in Washington. Both CABBAGE APHID and TURNIP APHID and, to a lesser extent, other aphids were abundant on crucifers in Eastern and North Central States. Where colonies of cabbage aphid were established in Wisconsin, infestations could not be eliminated, only checked. Cabbage aphid also developed well in California and Oregon. In the latter State, control was necessary in broccoli fields. TURNIP MAGGOT was serious as usual in Alaska, but infestations appeared one month later than normal. CABBAGE MAGGOT continues to be a problem in western Washington where resistance to soil insecticides was noted. Resistance to insecticides was also noted in Oregon, but the standard controls are still effective in New York. Cabbage maggot was damaging to destructive in California, Montana, Wisconsin, Michigan and Pennsylvania as well.

CABBAGE LOOPER (Trichoplusia ni) was again abundant and destructive to several cole crops in all sections of MARYLAND. On the Eastern Shore of VIRGINIA, cabbage looper was present but not numerous on cole crops in late June. It increased in abundance in August due to a period of dry weather, and it did not respond to chemical treatment. At that time, about 10 percent of the larvae on broccoli at the Painter Station, Accomack County, was infected with a nuclear polyhedrosis virus. This looper followed the usual course of building up to very high numbers on cole crops on the Eastern Shore and then being taken out with a virus in September. All insecticides were generally ineffective against cabbage looper. Cabbage looper in NORTH CAROLINA caused considerable damage to commercial cabbage in Pasquotank County in mid-June. This insect and Pieris rapae combined to riddle untreated cabbage in many areas of North Carolina. Cabbage looper was abundant on collards locally in SOUTH CAROLINA, and a number of farmers had difficulty controlling the pest in GEORGIA, where light to heavy infestations occurred on cabbage. Cabbage looper also caused severe damage in MISSISSIPPI in several localities.

Cabbage looper developed heavy on cole crops in ARIZONA during the fall. Populations were slow in developing in CALIFORNIA but became general and damaging to many truck crops. Infestations remained unusually late. In OREGON, cabbage looper populations increased rapidly in the crucifer-growing areas of Multnomah, Marion and Washington Counties the week of September 16. It was not observed in northwestern WASHINGTON. Cabbage looper was found only in trace numbers in COLORADO on cabbage; damage was very light. The looper damaged brussels sprouts, cabbage, broccoli, kohlrabi and mustard in Dimmit County, TEXAS, and in the southeastern area of the State. Cabbage looper was less abundant than usual in OHIO; was of minor importance in MICHIGAN in mid-August; was very light throughout NEW YORK; and was relatively scarce in NEW HAMPSHIRE.

IMPORTED CABBAGEWORM (Pieris rapae) infestations in MAINE were observed in only a few locations by mid-July; moderate to heavy infestations were causing severe damage to broccoli and cauliflower in Orono area, Penobscot County; and light numbers and injury were found on cole crops in Cumberland County in late August. Heavy numbers were observed causing severe damage to cauliflower and cabbage in the Presque Isle area, Aroostook County, Maine. Imported cabbageworm was only moderately abundant in NEW HAMPSHIRE. The outer leaves of cole crops were damaged in late summer in RHODE ISLAND. Adults were noted in the State throughout the season. Larvae were usually accompanied by cocoons of a parasitic braconid (Apanteles sp.) in Rhode Island. Imported cabbageworm was present early in the season in NEW YORK; however, it never built up beyond a moderate infestation. An incidence of parasitism by Apanteles sp. was noted throughout the season. Imported cabbageworm populations in MARYLAND during June and July were heavy on cabbage and other cole crops in most sections of the State. On the Eastern Shore of VIRGINIA, this butterfly was quite numerous in cole crops in late June and present in late September, but in general it was controlled by treatments applied for cabbage looper. Infestations in GEORGIA were light to moderate on cabbage.

Imported cabbageworm was a problem on cabbage in MICHIGAN, especially during May and June. In OHIO, populations were about normal during 1962. Larvae were not observed in WASHINGTON, although adults were numerous. Larvae became a serious threat to crucifer plantings in Multnomah, Washington and Marion Counties in OREGON after September 17. At that date, egg laying was generally observed but control proved effective. Imported cabbageworm was approximately normal in numbers and/or injury in UTAH during the season. Imported cabbageworm caused heavy damage to cole crops in isolated areas of NORTH DAKOTA.

Cabbage looper and imported cabbageworm combined to riddle untreated cabbage in many areas of NORTH CAROLINA, and these two species destroyed nearly 100 percent of the cabbage plantings in northeast KANSAS.

DIAMONDBACK MOTH (Plutella maculipennis) developed fairly heavy populations in CALIFORNIA on cabbage in the Thermal area, Riverside County. In OREGON, this species was extremely abundant in Ontario-Nyssa area, Malheur County, crucifer plantings in mid-June. Larvae were not observed in northwestern WASHINGTON, although adults were numerous. During 1962, extremely large flights were observed in MONTANA. Diamondback moth was more damaging and/or abundant than usual in 1962 in UTAH. Only trace numbers were found in COLORADO on cabbage. Damage in that State was very light. Diamondbach moth was scarce on the Eastern Shore of VIRGINIA. A few were noted on cole crops in late June and it was present in late September but, in general, diamondback moth was controlled by treatments applied for cabbage looper.

CROSS-STRIPED CABBAGEWORM (Evergestis rimosalis) was noted in 2 garden plantings of cabbage in Randolph and Wilson Counties, NORTH CAROLINA, in early July. SOUTHERN CABBAGEWORM (Pieris protodice) was heavy on broccoli in Santa Cruz County, CALIFORNIA; and ALFALFA LOOPER (Autographa californica) was abundant on processing broccoli in Skagit County, WASHINGTON, during July. Young cabbage in Deaf Smith County, TEXAS, was severely damaged by TOMATO FRUITWORM (Heliothis zea).

RED TURNIP BEETLE (Entomoscelis americana) was found in large numbers and caused considerable damage to all crucifers in gardens in most of the native villages along the Yukon and Kuskokwim Rivers in northern ALASKA.

STRIPED FLEA BEETLE (Phyllotreta striolata) caused damage to crucifer seedbeds early in the season in NEW YORK, and Phyllotreta spp. were again abundant on several cruciferous crops in MARYLAND during 1962. Unspecified FLEA BEETLES damaged cabbage in Dona Ana County, NEW MEXICO; treatments were effective. Striped flea beetle populations in WYOMING were about the same as in 1961. Radishes were heavily damaged in Park County.

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) adults first appeared in northwestern WASHINGTON on April 16, which was 2 weeks later than normal. Resistance to one of the standard control chemicals appears to be developing.

HARLEQUIN BUG (Murgantia histrionica) infested collards in MARYLAND in Prince Georges County, and kale and broccoli in Prince Georges and Wicomico Counties, same State. Harlequin bug was a pest of kale, cabbage, turnips and other crops in many areas of TEXAS.

CABBAGE APHID (Brevicoryne brassicae) displayed considerable activity over most of MAINE. Damage was reported heavy in York County and moderate in Orono area, Penobscot County, in early June. Cabbage aphid caused moderate injury to radishes in Kennebunkport, York County, in mid-June. Heavy populations and severe damage occurred in Falmouth area, Cumberland County, in mid-July to turnips. Heavy egg deposits were found in Hancock County during this same period. Cabbage aphid massed on broccoli in RHODE ISLAND in Kingston, Washington County,in mid-August, but it was not economically important. The pest was quite prevalent early in the season in NEW YORK; however, it did not reach the anticipated high number due to the extremely cool conditions which existed throughout the State during the growing season. Cabbage aphid heavily infested some plantings of cabbage in Montgomery and Prince Georges Counties, MARYLAND. Cabbage aphid was generally distributed and caused more damage than usual on the Eastern Shore of VIRGINIA in April. Control measures were hampered by the continued cool weather.

Cabbage aphid was generally a problem in MICHIGAN during May and early June on all crucifers. Populations were generally high also in WISCONSIN in most cabbage-growing areas, although less so in Shawano County than in southeastern counties. Where colonies had once become established, infestations could generally only be checked,not eliminated.

Cabbage aphid caused heavy damage in TEXAS to cabbage in the Winter Garden area, Dimmit County, and in the lower Rio Grande Valley. The aphid developed well in CALIFORNIA because of the cool weather which prevailed. Most crops were infested. Control was necessary on broccoli fields in OREGON in the Gresham area, Multnomah County, from October 13. Cabbage aphid was approximately normal in numbers and/or injury in UTAH.

TURNIP APHID (Hyadaphis pseudobrassicae)* was very common on turnips in OHIO, and averaged up to 75 per leaf on turnips in the Winter Garden area of TEXAS during February. GREEN PEACH APHID (Myzus persicae) was abundant on radishes and turnips in OHIO, and there was a considerable incidence of migrating forms of green peach aphid in NEW YORK early in the season, but no serious infestations developed on cole crops. Undetermined APHIDS were heavy in Baltimore County, MARYLAND, on commercial young turnips, and they were a problem on collards in SOUTH CAROLINA. Various species of APHIDS increased on greens crops late in 1962 in ARKANSAS.

TURNIP MAGGOT (Hylemya floralis) was serious as usual in ALASKA, but infestations on crucifers were not serious until late June instead of late May. Larvae were still active in turnips in mid-September. Normally only pupae are found after the third week in August. SEED-CORN MAGGOT (H. cilicrura) continued to be found in the Matanuska Valley of Alaska, especially on crucifers infested early by the turnip maggot.

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* See CEIR 13(5):84

CABBAGE MAGGOT (Hylemya brassicae) continues to be a problem in western WASHINGTON where resistance to soil treatments was noted. It was found to be partially resistant to cyclodiene chemicals at Northwestern Washington Experiment Station. Serious problems on commercial broccoli resulted from control applications being used too late. Resistance was also noted in OREGON where resistance to previously effective soil insecticides is showing up, particularly in the crucifer-growing area of Multnomah County. Cabbage maggot was damaging to several crops in CALIFORNIA; brussels sprouts in Santa Cruz County and turnips in San Benito County were injured. Cabbage plantings in MONTANA, in the Philipsburg area, Granite County, were destroyed by cabbage maggot. Cabbage maggot became noticeable in cabbages and radishes in WISCONSIN in scattered areas, with infestations of the first generation being the worst in many years in the Racine-Kenosha area. In lower MICHIGAN, untreated radishes were seriously injured in the muck areas. Cabbage maggot caused severe injury to early planted cabbage in the central part of PENNSYLVANIA. Infestations in NEW YORK remained normal. The standard chlorinated hydrocarbon insecticides continued to control this pest under conditions existing in New York. Cabbage maggot was not serious in CONNECTICUT as most commercial fields were treated early, nor was it commercially significant in RHODE ISLAND and NEW HAMPSHIRE.

SNAILS and SLUGS were especially severe on cabbage in coastal villages of southeast ALASKA.

Cucurbit Insects

Highlights:

A LEAF BEETLE (Acalymma gouldi), which had not been found in Indiana since the original type was collected there in 1942, was again found in numbers in 1962. STRIPED CUCUMBER BEETLE was also abundant in Indiana and in Maryland, Rhode Island and Maine. MELON APHID was troublesome locally in Massachusetts, and SQUASH BUG required treatments in Texas. SPIDER MITES were a serious problem in Maryland.

STRIPED CUCUMBER BEETLE (Acalymma vittata) appeared in the middle of May in INDIANA, which is about 2 weeks earlier than usual. On the whole, wilt was much more prevalent than in former years. Adults migrated into commercial fields and home gardens in small numbers over a period of several weeks. As a consequence, fewer acres were treated with sufficient insecticides to check the striped cucumber beetle and thus the bacterial wilt which it helped spread. Counts were lower in OHIO in 1962 than they were in 1961. Adults were again abundant in most sections of MARYLAND and injurious to young cucumbers and squash. In August, late cucumber, squash and pumpkins in Baltimore and Worcester Counties were attacked. Striped cucumber beetle was present early in the season in NEW YORK, but the population is considered to have been lighter than normal. This beetle build up heavily in Washington, Kent and Providence Counties, RHODE ISLAND, in early July. Striped cucumber beetle was reported from numerous locations in MAINE. Population levels varied from moderate to heavy, and damage to cucumbers and squash in particular was moderate to severe. Striped cucumber beetle was observed feeding in MISSOURI gardens. A related LEAF BEETLE (Acalymma gouldi), described by H. S. Barber from specimens collected in INDIANA in 1942, and which had not been collected in that State since, was relatively numerous during the fall of 1962 and was found feeding on wild cucumber, squash, melons and cucumbers.

SQUASH BEETLE (Epilachna borealis) was present in gardens in Peace Dale, Washington County, RHODE ISLAND, July 2 and through September. This species is not widespread nor well known in the State.

MELON APHID (Aphis gossypii) was heavy locally on cucumbers during early August in RHODE ISLAND, and very troublesome on pickling cucumbers in MASSACHUSETTS. It was rather abundant on pumpkin-squash in several areas of DELAWARE during late August and on melons in one area of Kent County. Melon aphid built up heavier-than-normal populations in NEW YORK on cucurbits and attacked cantaloups and watermelons in all areas of TEXAS. Melon aphid damage was below normal this past season in UTAH, although it was locally damaging. In CALIFORNIA, medium populations were noted on squash locally in Santa Cruz County.

LEAFHOPPERS were very abundant in CALIFORNIA and light to heavy populations occurred on melons and squash.

CABBAGE LOOPER (Trichoplusia ni) damaged squash in the Winter Garden area, Dimmit County,and in the southeastern area of TEXAS. Light infestations were present on melons in ARIZONA during the spring. Cabbage looper locally infested pumpkins in MARYLAND, and CUTWORMS damaged young cantaloup plants in Churchill County, NEVADA.

SQUASH VINE BORER (Melittia cucurbitae) adults were in flight in Peace Dale, Washington County, RHODE ISLAND, July 18. No reports of economically significant concentrations were reported. Adults appeared in WISCONSIN beginning the third week of June, and egg laying was common by the first week of July. Larval infestations were severe in several plantings of pumpkins in Dane County where death of the vines and premature ripening of fruit occurred. Squash vine borer heavily damaged squash plants in Trinity County, TEXAS, and MELONWORM (Diaphania hylinata) damaged watermelons and cantaloup plants in south Texas.

SQUASH BUG (Anasa tristis) required treatment on squash and melons in most areas of TEXAS. In MISSOURI, the bug was observed feeding in gardens and on truck crops. This coreid was below average in numbers and importance in UTAH. Populations in NEVADA were lower in the central counties than they were in 1961. It was very heavy in the southern counties.

TARNISHED PLANT BUG (Lygus lineolaris) infestations in MAINE seemed somewhat in excess of the normal level. Moderate infestations were reported from Cumberland, Oxford, Androscoggin and Sagadahoc Counties, causing light to moderate damage to squash and other crops.

Several WHITEFLIES were pests of melons over the State of CALIFORNIA. These whiteflies were more abundant in occurrence in 1962 than in former years.

LEAF MINER FLIES, probably several species, were present to fairly common on pumpkins and squash in DELAWARE in late August. A leaf miner fly (Liriomyza sp.) was especially troublesome on cantaloups and watermelons in both the Winter Garden, Dimmit County, and the lower Rio Grande Valley areas of TEXAS.

SPIDER MITES (Tetranychus spp.) were again a serious problem in MARYLAND in several plantings of cantaloups and watermelons on the lower Eastern Shore. Spider mites were also a problem in local areas of TEXAS on cucurbits in central and south central areas. PACIFIC SPIDER MITE (T. pacificus) developed medium populations on melons in Yolo County, CALIFORNIA, in September.

A THRIPS (Taeniothrips orionis) was numerous on cucumber blossoms in ALASKA where it was noted feeding on pollen in greenhouses in Fairbanks area. Thrips, primarily Frankliniella occidentalis, were light to heavy on melons in ARIZONA during the spring and early summer. F. occidentalis and ONION THRIPS (Thrips tabaci) were variable on melons, but required control in scattered plantings in TEXAS. Several species of THRIPS were abundant on cucumbers and cantaloups in MARYLAND; many infestations were overlooked by the growers.

An EARWIG (Euborellia cincticollis) occurred in fairly heavy numbers in melon fields in Imperial County, CALIFORNIA. Primary damage is the breaking of the skin on the underside of the melons which allows fungi to cause rot.

A SMINTHURID SPRINGTAIL (Onychiurus pseudarmatus) damaged cucumber plants in Skagit County, WASHINGTON.

Asparagus and Onion Insects

Highlights:

ONION MAGGOT caused considerable damage to green bunching onions in Colorado, but lesser amount of damage to dry onions. ONION BULB FLY was found for the first time in Pondera County, Montana; a new State record. ASPARAGUS BEETLE was collected for the first time in Nebraska. ONION THRIPS was the most prevalent thrips on truck crops in California. This species was medium to heavy on green onions and heavier than normal on dry onions in Nevada.

ONION MAGGOT (Hylemya antiqua) caused considerable damage to green bunching onions in COLORADO and lesser amounts of damage to dry onions in Adams and Weld Counties, same State. Onion maggot was found in Montrose County onion fields in July and early August mainly in plants that had been infected with a disease early in the growing season. Loss of dry onions due to insects in Colorado has been less than 1 percent. In areas where losses have been relatively high, the practice of better field sanitation and crop rotation would aid materially in reducing the loss. Onion maggot was approximately normal in numbers and/or injury in UTAH. This fly caused only slight damage in OREGON to onions in the Willamette Valley and Ontario area, Malheur County. Onion maggot was evident early in the season in MICHIGAN in all onion-growing areas, especially at the ends of rows. No evidence of resistance was observed in Michigan to the presently recommended insecticides. Onion maggot continued to be a pest of minor importance in ALASKA.

ONION BULB FLY (Eumerus strigatus) was found in onion fields of COLORADO late in July and early August. Like onion maggot, this fly was found mainly in plants infected with a disease early in the growing season. Onion bulb fly was found for the first time in MONTANA in a tulip bed in Conrad, Pondera County.

ASPARAGUS BEETLE (Crioceris asparagi) and SPOTTED ASPARAGUS BEETLE (C. duodecimpunctata) caused occasional local damage to asparagus in VIRGINIA. Populations of asparagus beetle were above normal on the upper Eastern Shore of MARYLAND early in the season and on brush during the summer. Asparagus beetle adults were first collected in RHODE ISLAND in East Greenwich, Kent County, on May 17; all stages were common by June 14. Adults of spotted asparagus beetle were collected in Rhode Island on May 24 in the same planting; all stages of this species were also common by June 14. Asparagus beetle was recorded for the first time in NEBRASKA in Lancaster County on asparagus. Spotted asparagus beetle was quite abundant on asparagus in Nebraska in Scotts Bluff County in July and August. Both asparagus beetle and spotted asparagus beetle damage in UTAH was below normal this season. Local, medium infestations of asparagus beetle were noted in CALIFORNIA on asparagus in Orange County.

ONION THRIPS (Thrips tabaci) was the most prevalent thrips in truck crops in CALIFORNIA; it occurred on onions and asparagus. In NEVADA, infestations of this species were medium to heavy on green onions in Clark County in April, heavy on dry onions in Eureka County, and heavier than normal on dry onions in Lyon County. In UTAH, the pest was approximately normal in numbers and/or injury.

Onion thrips ranged 5-50 per plant in all onion-growing areas of COLORADO, but populations were kept at low levels by use of controls. A thrips (*Frankliniella occidentalis*) primarily, and other species, were light to heavy on onions in ARIZONA during the spring and early summer. Populations of *F. occidentalis* and onion thrips were variable in onions in TEXAS, but they required control in scattered plantings within several areas of the State. Several thrips species were abundant in MARYLAND on onions.

ARMY CUTWORM (*Chorizagrotis auxiliaris*) was a serious problem on onions in TEXAS in the south central area. Another noctuid, CABBAGE LOOPER (*Trichoplusia ni*), caused some damage to onions in Dona Ana County, NEW MEXICO.

GRASSHOPPERS caused some damage in CALIFORNIA resulting from invasions into crops, but this damage was minimal statewide. Asparagus was somewhat damaged. An undetermined native LOCUST caused considerable damage to asparagus plantings in the Coachella Valley, Riverside County, California, the past several years. It was found infesting asparagus fields in Imperial County in 1962.

Several WHITEFLY species were pests throughout CALIFORNIA on onions; whiteflies were more abundant in occurrence in 1962 than in former years.

A SPIDER MITE (*Aplonobia myops*) developed local, medium populations in CALIFORNIA on asparagus plantings in Orange County.

Artichoke and Lettuce Insects

Highlights:

TOMATO FRUITWORM was much heavier than usual in lettuce fields of New Mexico. A continued program was necessary to reduce populations to noneconomic levels. SIX-SPOTTED LEAFHOPPER was abundant in Maine, New York, Michigan and California. Aster yellows-infected plants were usually less than normal, except in Maine, where a substantial increase over normal level of infection was noted. SNAILS and SLUGS were especially severe on lettuce in southeastern Alaska. SLUGS were also heavy in an artichoke planting in California.

ARTICHOKE PLUME MOTH (*Platyptilia carduidactyla*) caused damage nearly equal to past years in the artichoke-growing areas of CALIFORNIA. CABBAGE LOOPER (*Trichoplusia ni*) developed light infestations in lettuce in ARIZONA in the spring,and, in the fall,this species and another noctuid, BEET ARMYWORM (*Spodoptera exigua*), were light on lettuce. General control measures were required in some fields. Cabbage looper was also damaging to lettuce in NEW MEXICO in Dona Ana and Valencia Counties. Beet armyworm also damaged lettuce in Dona Ana County during October. TOMATO FRUITWORM (*Heliothis zea*) was much heavier than usual in lettuce fields of New Mexico; this last species caused severe damage especially in southern counties. A continued control program was necessary for *H. zea* during the lettuce-growing season in the fall to reduce populations to noneconomic level. Tomato fruitworm damage to lettuce in CALIFORNIA was probably not as great in 1962 as it was in 1961. Trace numbers of cabbage looper was found on lettuce in COLORADO, where growers control practices kept the crop clean. There were no losses reported in that State.

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) was reported heavy in York, Cumberland and Oxford Counties, MAINE, on lettuce. Yellows-infected lettuce plants were noted in several locations, with over 20 percent of the infections found in 2 plantings. This represents a substantial increase over normal level of this disease in Maine. Six-spotted leafhopper migration into MICHIGAN in sizeable numbers occurred in May and early June. Problems associated with aster-yellows virus transmission were not extensive in 1962. In WISCONSIN, adults were first found in the southwestern area on May 7. It first appeared on April 27 in 1961. Populations in Wisconsin remained moderate, with counts as high as 15 per 100 sweeps. Aster yellows became evident in at least one area, but it was not too prevalent. Six-spotted leafhopper was generally of little concern in NORTH DAKOTA.

GREEN PEACH APHID (Myzus persicae) was general in most truck crops in CALIFORNIA. The worst infestations ever recorded on lettuce occurred in the Soledad area, Monterey County.

TARNISHED PLANT BUG (Lygus lineolaris) seemed somewhat in excess of normal levels in MAINE. Moderate infestations were reported in Cumberland, Oxford, Androscoggin and Sagadahoc Counties, causing light to moderate damage to lettuce.

THRIPS, primarily Frankliniella occidentalis, were light to heavy on lettuce and some other crops in ARIZONA during the spring and early summer.

SNAILS and SLUGS were especially severe on lettuce in coastal villages of southeast ALASKA. Slugs were heavy in an artichoke planting in CALIFORNIA at Castroville area, Monterey County.

Carrot Insects

A WIREWORM (Cardiophorus sp.) infested carrots in many locations in CALIFORNIA. Preplant crops were used in several areas. Several WHITEFLY species were also pests of carrots throughout California.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) was heavier than normal in NEW YORK on carrots, but only a small percent of the population carried the aster-yellows virus as indicated by the low incidence of diseased plants. LEAFHOPPERS were abundant in CALIFORNIA, where light to heavy populations occurred on carrots.

Sweetpotato Insects

Highlights:

The heaviest SWEETPOTATO WEEVIL infestations in a decade occurred in Louisiana, and the weevil spread in southern parts of Mississippi in spite of severe freezes in that State. Another WEEVIL (Rhyssomatus palmacollis) was of concern to sweetpotato growers in Arkansas where the larvae of this species showed some control difficulty.

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus), contrary to expectations, developed the heaviest infestations in a decade in LOUISIANA. In spite of severe freezes during the winter of 1961-62, sweetpotato weevil continued to spread in several southern portions of MISSISSIPPI. A WEEVIL (Rhyssomatus palmacollis) larva in sweetpotatoes has been the chief concern to growers in central ARKANSAS, where difficulty of control has been experienced.

BANDED CUCUMBER BEETLE (Diabrotica balteata) was less destructive to sweetpotatoes in LOUISIANA than at any time since 1959. However, it caused serious damage to a significant portion of the crop in the major sweetpotato-producing areas.

SOUTHERN POTATO WIREWORM (*Conoderus falli*) caused slight damage to sweetpotatoes in a field in Pender County, NORTH CAROLINA, sometime previous to July 24; most of the injury possibly occurred during the previous 1-2 weeks, but this was difficult to ascertain. Larvae were recovered from this field several times from July to October, and were also recovered from a field of sweetpotatoes near Tabor City, and a field near Clinton in southern portion of Sampson County during late October. TOBACCO WIREWORM (*C. vespertinus*) was also a problem in North Carolina. Larvae of tobacco wireworm were recovered from a 3-acre sweetpotato field in Robeson County on November 12, which was not dug because of wireworm holes and serpentine trails on the surface of the sweetpotato roots. Cause of the latter damage was not determined. Small, shallow wireworm holes were commonly observed on lots of sweetpotatoes going through the Tabor City Market, but they did not generally affect the grade. Observations and reports indicate that wireworm damage to sweetpotatoes in the Benson area was minor.

GREEN PEACH APHID (*Myzus persicae*) was common to abundant in DELAWARE on sweetpotatoes throughout the season.

Mint Insects

ALFALFA LOOPER (*Autographa californica*) damaged mint in the Yakima Valley of WASHINGTON. Alfalfa looper populations were hit by a virus in mint fields of Marion County, OREGON, in early July, which kept numbers below economic levels. Adults of VARIEGATED CUTWORM (*Peridroma saucia*) began to appear in the Willamette Valley of Oregon blacklight traps June 21. Early instars were found in Linn County mint fields July 6. Meadow mint was damaged by several species of CUTWORMS in INDIANA early in the season.

STRAWBERRY ROOT WEEVIL (*Brachyrhinus ovatus*) damaged peppermint near Othello in the Columbia Basin of WASHINGTON.

Bramble Insects

RASPBERRY CROWN BORER (*Bembecia marginata*) damaged cane fruits at several western OREGON locations in 1962. A GEOMETRID MOTH (*Synchlora* sp.,near or *S. denticularia*) damaged harvested blackberries in Smith County, TEXAS. ORANGE TORTRIX (*Argyrotaenia citrana*) larvae contaminated harvested red raspberries in Vancouver area, Clark County, WASHINGTON. A LEAF ROLLER MOTH (*Platynota stultana*) developed light to medium in Fresno County, CALIFORNIA, on boysenberries, and another LEAF ROLLER MOTH (*Choristoneura obsoletana*) damaged harvested blackberries in Smith County, TEXAS.

RASPBERRY SAWFLY (*Monophadnoides geniculatus*) was generally present throughout the entire State of MINNESOTA, but it did not cause serious damage. A EURYTOMID GALL WASP (*Eurytoma* sp., near *incerta*) caused very abundant stem-gall formations on wild raspberries growing on Moscow Mountain, IDAHO. Infestations were first noted in June.

RED-NECKED CANE BORER (*Agrilus ruficollis*)caused local, heavy damage to boysenberry canes in Bastrop County, TEXAS. ROSE STEM GIRDLER (*A. rubicola*) was below average in numbers and importance in UTAH. EASTERN RASPBERRY FRUITWORM (*Byturus rubi*) was heavy on raspberry plantings in Kingston, Washington County, RHODE ISLAND. RASPBERRY CANE BORER (*Oberea bimiculata*) damaged many canes in Anchorage area of ALASKA.

GRASSHOPPER damage to berry crops, particularly to raspberries, has been above normal in central and northern UTAH this past season. Grasshoppers caused some damage to raspberry plantings in CALIFORNIA in Santa Clara County.

SPIDER MITE damage to raspberries, largely by TWO-SPOTTED SPIDER MITE (Tetranychus telarius) and T. mcdanieli, was serious in UTAH. However, they were late in starting and the worst damage often occurred after crop was largely harvested. Two-spotted spider mite required some control in cane fields in the Willamette Valley of OREGON. Two-spotted spider mite ranged light to severe on raspberry plantings in NORTH DAKOTA, especially in the southeastern area. Spider mites were present in moderate numbers in MINNESOTA on raspberry plants.

Strawberry Insects

Highlights:

STRAWBERRY ROOT WEEVIL, which was probably introduced with the plants, was severe locally in Alaska. This weevil also caused severe injury in Whatcom County, Washington, even though soil treatments were applied. Two WEEVILS (Sciopithes obscurus and Nemocestes incomptus) are becoming a serious threat to strawberry growing in the Willamette Valley of Oregon. STRAWBERRY LEAF ROLLER caused a total loss of the strawberry crop in a 5-acre planting in Kansas. MEADOW SPITTLEBUG overwintered successfully on strawberries in the Matanuska Valley of Alaska; this is believed to be the northernmost record of this species. TWO-SPOTTED SPIDER MITE damaged strawberries in Washington in the early spring; controls were needed in local areas of Oregon.

STRAWBERRY WEEVIL (Anthonomus signatus) adults caused concern to strawberry growers in MARYLAND in Prince Georges and Wicomico Counties. It was also of some concern in WISCONSIN in Waupaca County in mid-June, where it severed strawberry blossoms. In late February and early March,it caused concern to growers in the strawberry belt of LOUISIANA in a few areas. STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) was severe in strawberry patches in Anchorage, ALASKA. This species was probably introduced with the plants. Strawberry root weevil severely damaged strawberries in Whatcom County, WASHINGTON, even though soil treatments were applied. Both BLACK VINE WEEVIL (B. sulcatus) and strawberry root weevil are causing increasing amounts of damage to strawberry plantings in the Willamette Valley of OREGON. Two other WEEVILS (Sciopithes obscurus and Nemocestes incomptus) are becoming a serious threat to strawberry growing in the northern Willamette Valley.

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) infestations in KANSAS were greater than those of 1961. One untreated, 5-acre strawberry field in Sedgwick County was a total loss, with 98 percent of the leaves rolled. Larvae destroyed most of the fruit. Leaves in a planting less than one mile distant, which was well treated, showed only 0.1 percent injury. This leaf roller moth was found in fruiting fields in several locations in MINNESOTA. In WISCONSIN, strawberry leaf roller was common on strawberry leaves in many areas, but it was less abundant than in other years. Some moderate to heavy infestations occurred in MARYLAND in Somerset and Wicomico Counties; and the pest was heavy in small plantings in the Pullman area of Whitman County, WASHINGTON. It was exceedingly abundant and caused extensive damage to strawberries in IDAHO. Scattered infestations occurred statewide in MONTANA during 1962. Strawberry leaf roller continued approximately normal in numbers and/or injury in UTAH.

Two NOCTUID MOTHS (Diarsia rosaria and Proxenus mindara) developed medium to heavy populations on strawberries in the Watsonville area of Santa Cruz County, CALIFORNIA.

STRAWBERRY APHID (Pentatrichopus fragaefolii) was generally light on strawberries in Orange and Santa Barbara Counties, CALIFORNIA. It was abundant in OREGON in the northern Willamette Valley counties in the spring; controls were effective.

FOXGLOVE APHID (Acyrthosiphon solani)* was very numerous in strawberry fields in northwestern WASHINGTON, but not damaging. STRAWBERRY ROOT APHID (Aphis forbesi) and strawberry aphid were below average in numbers and importance in UTAH. MELON APHID (Aphis gossypii), YELLOW ROSE APHID (Acyrthosiphon porosum)* and POTATO APHID (Macrosiphum euphorbiae) developed heavy populations throughout the strawberry-growing sections of LOUISIANA. These species caused noticeable foliage distortion in many fields. Several APHIDS, including Pentatrichopus spp., ranged light to moderate on strawberry plantings in Montgomery, Prince Georges and Wicomico Counties, MARYLAND.

A WHITEFLY was serious on strawberries in southern INDIANA.

MEADOW SPITTLEBUG (Philaenus spumarius) overwintered successfully on strawberries in ALASKA in the Matanuska Valley, which is believed to be the northernmost record. Spittlebugs continue to be numerous in southeastern Alaska on strawberries and other crops. Meadow spittlebug was very numerous on strawberries and other plants in WASHINGTON, starting in May in western Washington. Populations were normal and troublesome in the Willamette Valley of OREGON on strawberry plantings from early April through May. Fields not protected by chemical treatments averaged 3 egg masses per linear foot of row in Polk County, Oregon, May 31. Nymphs of meadow spittlebug were common to abundant on strawberry plants in IDAHO, in northern portions of the State, during June. This spittlebug was less abundant in WISCONSIN strawberry plantings than in 1961.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) damaged strawberries in northwestern WASHINGTON during early spring. In OREGON, this spider mite required control in strawberry plantings in Milton-Freewater area of Umatilla County; and to a lesser degree in Willamette Valley strawberry plantings. Two-spotted spider mite caused injury to strawberry plantings at the experiment fields near Wathena in Doniphan County, KANSAS, in April. This species caused severe damage to strawberries in an ILLINOIS planting in late April. SPIDER MITES were present in moderate numbers throughout MINNESOTA on strawberries. Tetranychus spp. were again a serious problem in several plantings of strawberries on the lower Eastern Shore of MARYLAND. A SPIDER MITE (Tetranychus lobosus) was troublesome on strawberries in LOUISIANA, but damage was not severe.

An outbreak of CYCLAMEN MITE (Steneotarsonemus pallidus) was reported on one strawberry field in Skagit County, WASHINGTON. Cyclamen mite was reported on Red Rich, Evermore, Ogallala, Premier and, to a lesser extent, on other strawberry varieties in MINNESOTA.

Miscellaneous Truck Crop Insects

A LEAF MINER FLY (Liriomyza sp.) was especially troublesome on okra and other crops in both the Winter Garden, Dimmit County, and lower Rio Grande areas of TEXAS.

COTTON APHID (Aphis gossypii) attacked okra in all areas of TEXAS.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) caused heavy damage to rhubarb in Washoe County, NEVADA.

Larvae of probably a GALL MIDGE infested mushroom spawn in Seward area of ALASKA.

EUROPEAN GRAIN MOTH (Nemapogon granella) developed heavy in a mushroom house in Bellota, San Joaquin County, CALIFORNIA. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) caused excessive damage to row crops in the Columbia Basin of

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WASHINGTON, but less than in previous years, due to the cool season. Development was delayed 2-3 or more weeks. Infestations of two-spotted spider mite developed on many truck crops in CALIFORNIA. Most infestations were light, probably due to growers taking the precautions of acaricides after the damage caused to most truck crops the previous year. Spider mites were noted in gardens and on truck corps in MISSOURI. Spider mites were abundant in MISSISSIPPI.

GARDEN SYMPHALAN (Scutigerella immaculata) continues to be one of the most important pests in the State of OREGON, where irrigation is practiced. It is estimated that annual losses exceeding several million dollars may be attributed to this arthropod in Oregon.

GRAY GARDEN SLUG (Deroceras reticulatum) and other slugs were responsible for a considerable amount of damage to a wide range of vegetable crops in Willamette Valley of OREGON. Seedling plants were seriously injured in some areas. Unspecified SLUG species were a problem in home gardens in NORTH DAKOTA, especially in eastern areas subjected to excessive moisture. Slugs were of major concern in gardens in WISCONSIN; reports indicated high populations and serious damage to crops late in the season.

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TOBACCO INSECTS

Highlights:

BUDWORMS were heavier than in 1961 in Georgia and a major problem in North Carolina. POTATO TUBERWORM damaged some fields of tobacco in Georgia as much as 25 percent; this is the first infestation in Georgia in several years. HORNWORMS were above normal in Maryland and treatments were general. Also, complaints of hornworms in South Carolina were numerous. GREEN PEACH APHID was extremely heavy in Maryland during late July and August, and considerable controls were applied. This was one of the worst years on record in Maryland. Green peach aphid also required controls in Virginia. Infestations of TOBACCO FLEA BEETLE were more severe on tobacco in the field than for several years in Georgia. WIREWORMS (Conoderus spp.) were a problem in areas of Virginia, North Carolina, South Carolina and Georgia.

BUDWORMS (Heliothis spp.) were light to heavy in GEORGIA in 1962, and heavier than in 1961. Budworms were a major problem to tobacco growers in NORTH CAROLINA as usual. First damage reports were received from Columbus County the fourth week of May. Heavy egg deposition on tobacco seed heads in eastern North Carolina counties was noted during the last two weeks of June. Budworms were noticeable on early transplanted tobacco in Pittsylvania County, VIRGINIA; counts ranged 2-5 per 100 plants. Eggs were abundant; ranged 2-3 per seed head on older tobacco later in the season. Populations in MARYLAND were below normal for the second straight year, with only a few economic infestations occurring in 1962.

CABBAGE LOOPER (Trichoplusia ni) caused some damage to a field of tobacco in southwestern Wayne County, NORTH CAROLINA, during early July; and YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) caused heavy damage to tobacco locally in St. Marys County, MARYLAND. Unspecified CUTWORMS caused local damage to tobacco in some VIRGINIA localities. Also in Virginia, STALK BORER (Papaipema nebris) caused local, medium damage to burley tobacco at one location in Lee County.

POTATO TUBERWORM (*Gnorimoschema operculella*) infestations on GEORGIA tobacco were light to heavy in several counties. Some fields had 25 percent damage. This is the first infestation of this pest in the State in several years.

Both broods of HORNWORMS (*Protoparce* spp.) in MARYLAND were above normal, and treatments were general. First and second-brood hornworm infestations were light to medium in all tobacco fields checked in Pittsylvania County, VIRGINIA. Hornworms were a pest of tobacco in NORTH CAROLINA, but populations were considerably less than in 1961. First-brood eggs were noted on May 25 in Columbus County; 75 plants in 3 fields revealed 36 eggs and 2 second-stage larvae on that date. The second brood began during the third week of June. Mostly first and second-stage larvae averaged one per plant at Whiteville, and eggs, plus larvae, averaged nearly one per plant at Clayton. In SOUTH CAROLINA, there were more complaints of a population buildup than at any other time in the past 10 years. Hornworm infestations in GEORGIA were light and general throughout the tobacco-growing area.

GREEN PEACH APHID (*Myzus persicae*) populations were heavy on tobacco plants in two southern OHIO counties. Unharvested plants in October contained 75 to 80 individuals per blossom. Infestations on tobacco in MARYLAND during late July and August were extremely heavy; one of the worst years on record. Over 5,000 acres of tobacco in five counties were sprayed by aircraft. In Pittsylvania County, VIRGINIA, green peach aphid was more abundant in 1962 than in a number of years. Populations persisted in the field much longer than normal, probably due to the moderately cool summer. Damaging populations required control in other sections of Virginia, especially in late July and August. However, in NORTH CAROLINA, green peach aphid appeared on tobacco the second week of July, but did not attain damaging populations. Infestations were light on tobacco in the plant bed as well as on field tobacco in GEORGIA.

Infestations of SOUTHERN GREEN STINK BUG (*Nezara viridula*) and BROWN STINK BUG (*Euschistus servus*) were very light in GEORGIA and lighter than in more recent years.

Populations of TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) were generally below normal in MARYLAND, except for relatively short periods at the beginning and end of the season. In Pittsylvania County, VIRGINIA, populations remained at low levels on flue-cured tobacco early in the season, but adults began increasing in most tobacco fields in early August. Infestations, except in a few isolated cases, were generally lighter than in previous years in the State. Tobacco flea beetle was present on tobacco during the summer in NORTH CAROLINA, but little damage was observed. In GEORGIA, infestations on tobacco in the plant bed were light, lighter than in recent years. Infestations on tobacco in the field were heavy. Infestations in 1962 were more severe than in several years in Georgia. Infestations on tobacco in the field in Georgia are heaviest soon after the tobacco is transplanted and about the time of the first cropping. Unspecified FLEA BEETLES caused moderate damage to tobacco plants in OHIO during early September, with populations having been reported as heavy a few weeks earlier.

WIREWORMS (*Conoderus* spp.) caused local damage to tobacco in some localities in VIRGINIA. In NORTH CAROLINA, larvae of TOBACCO WIREWORM (*C. vespertinus*) and SOUTHERN POTATO WIREWORM (*C. falli*) severely attacked many newly transplanted fields of tobacco throughout the eastern part of the State during May. Up to 90 percent of the plants were damaged in some instances, and many were 30 to 35 percent damaged. There were over 100 complaints in North Carolina, many of which were investigated Many damaged fields had been previously treated with a broadcast application of a chlorinated hydrocarbon insecticide. Tobacco wireworm was the primary species found in most eastern tobacco-growing areas of North Carolina. However, southern potato wireworm was found more frequently in Columbus and Pender Counties, and a mixture of the two species was found in Onslow County. The only field investigated in Pamlico County proved to be infested with southern potato wireworm, which was also found in southern portions of

Bladen, Duplin and Jones Counties in tobacco fields. Another WIREWORM (C. lividus) was collected erratically throughout the area surveyed, but generally did not appear sufficiently abundant to be of great concern. However, 40 percent of the specimens collected in one heavily damaged field in Jones County was this species. Only seven specimens of wireworms other than those of the genus Conoderus were collected during the survey in North Carolina. In SOUTH CAROLINA, there were many complaints of localized damage by tobacco wireworm where it was not controlled by chlorinated hydrocarbon insecticides. The ratio of tobacco wireworm to southern potato wireworm varied within and among fields and counties in South Carolina. In GEORGIA, moderate to heavy infestations of tobacco wireworm, southern potato wireworm and C. auritus were reported throughout the tobacco area of the State.

VEGETABLE WEEVIL (Listroderus costirostris obliquus) larvae caused conspicuous damage to tobacco in beds on several farms in Calvert and St. Marys Counties, MARYLAND. Light to heavy infestations were present on tobacco in the plant bed in GEORGIA. Also in Georgia, POTATO STALK BORER (Trichobaris trinotata) adults were light and local on tobacco. JAPANESE BEETLE (Popillia japonica) adults caused light damage to tobacco in a few areas of VIRGINIA.

SEED-CORN MAGGOT (Hylemya cilicrura) - Dry conditions at critical time caused this species to be much less troublesome in MASSACHUSETTS on tobacco.

TOBACCO THRIPS (Frankliniella fusca) was generally light on transplanted tobacco in VIRGINIA.

GRASSHOPPERS (Melanoplus spp.) caused light to moderate damage to several tobacco fields in Charles and St. Marys Counties, MARYLAND, and some injury to tobacco was encountered in WISCONSIN.

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